Send in the clowns? Emotional reactions to hospital clown interventions

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Heiterkeit

Heiterkeit ist weder Tändelei,

noch Selbstgefälligkeit,

sie ist höchste Erkenntnis und Liebe,

ist Bejahen aller Wirklichkeit,

Wachsein am Rande aller Tiefen und Abgründe.

Sie ist das Geheimnis des Schönen

und die eigentliche Substanz jeder Kunst.

Hermann Hesse

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Abstract

This thesis focuses on the identification and assessment of emotional states elicited in individuals in response to hospital clown interventions. Research showed that hospital clown interventions can have a beneficial effect for patients in need of care, but the empirical evidence is thin, inconsistent and methodologically not free of criticism (Dionigi, Flangini & Gremigni, 2012). There is a lack of research that investigates the fine-grained changes in the emotional states of recipients of hospital clown interventions in comparison to other types of interventions. This thesis aimed at identifying the *uniqueness* of hospital clown interventions in their effects on individuals using a sound empirical methodology (subjective and objective assessment instruments, controlled experimental design). It comprises three empirical parts.

In Part One, an assessment instrument sensitive to the induction of clown-specific emotional states was developed (the *29 Clown Emotion List, CLEM-29*). Two studies were conducted to examine the usefulness of the instrument in the evaluation of hospital clown interventions. Study 1 hypothesized that the CLEM-29 represents state ratings sufficiently different from existing instruments for the assessment of emotional states and is more specific in predicting the total amount of positive affect in response to clowns than existing state scales. For the study, 119 adults watched two videos of clown interventions (a circus clown and a hospital clown), and rated their emotional state on the CLEM-29 as well as on two broader mood scales. Results showed some empirical overlap of the CLEM-29 ratings with general scales of mood, but many CLEM-29 ratings specific to hospital clowns (e.g., feeling connected to the clown, feeling touched) did not strongly relate to exiting scales. Furthermore, ratings from the CLEM-29 outperformed the existing scales in the prediction of the total amount of positive affect.

Study 2 in Part One (N = 183 adult observers) aimed at identifying the unique effects of hospital clowns on the emotional state of observers, and therefore investigated the

differences in elicited emotional states in response to hospital clowns, circus clowns and nurses. Four factors were found (amusement, *transcendence*, arousal and unease), which successfully distinguished between emotional states elicited by hospital clowns, circus clowns and nurses. Transcendence (which describes the recipients being uplifted and surpassing the ordinary) emerged as a core component of hospital clowning in that hospital clowns elicit a combination of amusement and feeling state that go beyond the typical humor response. Both samples used in Part One consisted of individuals observing hospital clown interventions. To replicate and extend the results, in the following parts the effects on the emotional state were investigated with a sample of adult hospitalized patients.

In Part Two, the CLEM-29 was presented to a group of 42 adult hospitalized patients involved in a hospital clown intervention to investigate whether the emotional states identified by experts and laypersons actually exist during a real clown-patient interaction. The study used a controlled experimental design within a natural hospital setting to examine the degree of similarity of emotions elicited when observing the intervention and when being involved in the intervention. Additionally, the experiment was designed to gain more insight into the unique effects of hospital clown interventions on patients in comparison to other types of intervention typically used in hospitals (e.g., a nurse assessment). Results showed that the hospital clown intervention elicited higher levels of self-reported amusement than a nurse intervention (while no difference was found for transcendence and unease). No differences were found between the emotional state of patients observing the intervention and patients involved in the intervention. Again a combination of transcendence and humor (here: the level of perceived funniness) best predicted the total amount of positive affect after the hospital clown intervention, supporting the notion that a hospital clown intervention replicates and exceeds the results from previous research. Importantly, the experiment had a higher internal validity than previous studies; however, external validity was limited, as only one

clown pair was used and thus no effects of different humor types were investigated, and results were valid only for the adult sample of patients in a rehabilitation center. Furthermore, no objective assessment of emotions was used, and no effects of individual differences in the emotional reaction of patients were investigated, which was done in Part Three.

Part Three only took into consideration the emotional reaction to the hospital clown intervention, and studied the facial display of enjoyment (Duchenne smile; Ekman, 2003) elicited by hospital clowns compared to false smiles (Non-Duchenne smile; $N = 26$). It aimed at validating the subjective emotional experiences of patients with an objective assessment method. The study furthermore examined individual differences of patients in their habitual susceptibility to smiling and laughing. *Trait cheerfulness* has been identified to predict the emotional experience and observable behavior of individuals in several humor studies (Ruch & Hofmann, 2012), and was therefore defined as a potential factor in influencing the emotional state of patients during an interaction with a hospital clown. Results identified the Duchenne smile as the predominant facial display of patients during the intervention (76% of all smiles were smiles of enjoyment). Additionally, patients with a higher frequency of Duchenne smiles also reported higher levels of perceived funniness of the clown visit, global positive feelings, transcendence and enjoyment of participating in the study, which demonstrated a high convergence of subjectively and objectively assessed emotional states. Individual differences in trait cheerfulness influenced the frequency of Duchenne smiles (high trait cheerful individuals had higher frequencies of Duchenne smiles than low trait cheerful individuals, and reported higher levels of positive emotions), indicating that the success of a hospital clown intervention depends, among other factors, on the general susceptibility of individuals to humor.

The thesis made an important contribution to the understanding of the elicited emotional states in observers and participants of hospital clown intervention, and provided a

suitable self-report instrument, which can be of use for future studies. The use of the standardized experimental design in Part Two and Three enhanced the internal validity as it reduced the likelihood for systematic errors. Results presented in the thesis are of use to clown organizations training clowns, as they clearly highlight the clown as successful stimulus for the induction of positive emotions in patients. For clowns it can also be of use to know which factors in patients influence the amount of positive reactions in response to a hospital clown intervention, so that they can quickly perceive signs of refusal and act accordingly in a sensitive way. On the other hand, the setting of the hospital clown intervention was somewhat artificial, and it might have had an influence on the expression of emotions in patients. The sample was a convenient sample with a wide age range, it was rather small and males were overrepresented. Future studies should try and replicate the findings in other care facilities, outside of rehabilitation centers, with different adult samples, and ideally test the effects of different clowns using different kinds of humor.

Zusammenfassung

Die vorliegende Doktorarbeit konzentriert sich auf die Identifizierung und Messung emotionaler Zustände, welche in Individuen durch eine Klinikclown Intervention ausgelöst werden. Die bisherige Forschung hat gezeigt, dass eine Klinikclown Intervention einen nutzbringenden Effekt für pflegebedürftige Patienten haben kann, aber die empirische Evidenz hierzu ist dünn, teilweise widersprüchlich und nicht frei von methodischen Kritikpunkten (Dionigi, Flangini & Gremigni, 2012). Es gibt eine Forschungslücke in der Erforschung der detaillierten Veränderungen im Gefühlszustand der Patienten, welche durch Klinikclown Interventionen ausgelöst werden, im Vergleich mit anderen Arten von Interventionen. Die vorliegende Arbeit hat zum Ziel, die *Einzigartigkeit* der Effekte von Klinikclown Interventionen auf Individuen zu identifizieren, und sich dabei aussagekräftiger empirischer Methodik zu bedienen (subjektive und objektive Messinstrumente, kontrollierte Experimente). Die Arbeit besteht aus drei empirischen Teilen.

Im ersten Teil wurde ein Messinstrument entwickelt, welches sensitiv für die Erfassung der Auslösung von Clown-spezifischen emotionalen Zuständen sein sollte (*29 Clown Emotion List*, *CLEM-29*). Es wurden zwei Studien durchgeführt, welche den Nutzen des Instruments in der Evaluation von Klinikclown Interventionen untersuchten. In Studie 1 wurde angenommen, dass die CLEM-29 Gefühlszustände repräsentiert, welche sich in ausreichender Form von bereits bestehenden Instrumenten unterscheiden, und spezifischer als bestehende Instrumente die Gesamtmenge an positivem Affekt vorhersagen kann, welche in Reaktion auf Clowns entsteht. Für die Studie schauten 119 Erwachsene zwei Videos von Clown Interventionen (ein Zirkusclown Video und ein Klinikclown Video) und schätzen ihre Gefühle auf der CLEM-29 ein, sowie auf zwei weiteren, bereits bestehenden Stimmungsmaßen. Die Ergebnisse zeigten, dass es eine gewisse empirische Überlappung der drei Instrumente gibt, dass aber die CLEM-29 einige Ratings beinhaltet, welche spezifisch für

Clowns gelten (z.B. sich mit einem Clown verbunden fühlen, sich wertgeschätzt fühlen), die nicht stark mit den anderen Skalen zusammenhängen. Des Weiteren konnten Ratings der CLEM-29 positiven Affekt besser vorhersagen als die beiden anderen Instrumente.

Studie 2 im ersten Teil (N = 183 erwachsene Beobachter) hatte zum Ziel, die einzigartigen Effekte der Klinikclowns auf den Gefühlszustand von Beobachtern zu identifizieren, und untersuchte deshalb Unterschiede in den Gefühlszuständen je nach Art der Intervention (Klinikclowns, Zirkusclowns, Krankenschwester Untersuchungen). Es wurden vier Faktoren in der CLEM-29 gefunden (Erheiterung, Transzendenz, Erregung und Unbehagen), welche gut zwischen den Gefühlen diskriminieren konnten, die durch die drei Arten der Interventionen ausgelöst wurden. Transzendenz (welche den Empfänger als erhöht und das Gewöhnliche überschreitend beschreibt) kristallisierte sich als Kernbestandteil von Klinikclown-Interventionen heraus, was bedeutet, dass Klinikclowns eine Kombination von Erheiterung und Transzendenz auslösen, welche die typische Humorreaktion übersteigt. Beide Studien des ersten empirischen Teils bestanden aus Stichproben von Beobachtern solcher Klinikclown Interventionen. Um die Ergebnisse zu replizieren und zu erweitern, wurden in den beiden folgenden empirischen Teilen die Effekte auf den Gefühlszustand von Personen anhand einer Stichprobe von echten Patienten in einer Pflegeeinrichtung untersucht.

Im zweiten Teil wurde die CLEM-29 einer Gruppe von 42 erwachsenen Reha-Patienten vorgelegt, welche in eine Klinikclown Intervention involviert waren, um zu untersuchen, ob die mithilfe von Experten und Laien entwickelten Gefühlszustände der CLEM-29 auch wirklich in Patienten, die mit einem Clown interagieren, ausgelöst werden. Die Studie verwendete ein kontrolliertes experimentelles Design innerhalb der natürlichen Krankenhausumgebung, um den Grad der Übereinstimmung zwischen den Emotionen von Beobachtern und involvierten Personen zu überprüfen, und um die Effekte der Klinikclown Intervention im Vergleich mit einer Vergleichsintervention zu untersuchen, welche

typischerweise im Krankenhaus zum Einsatz kommt (eine Untersuchung durch eine Krankenschwester). Die Ergebnisse zeigten, dass die Klinikclown Intervention mehr selbstberichtete Erheiterung als die Krankenschwester Intervention auslöste (während keine Unterschiede in Transzendenz und Unbehagen gefunden wurden). Keine Unterscheide wurden zwischen den Gefühlszuständen der Beobachter und involvierten Patienten gefunden. Und wieder konnte eine Kombination aus Transzendenz und Humor (hier: wahrgenommene Lustigkeit) am besten die Gesamtheit des positiven Affekts nach der Klinikclown Intervention vorhersagen. Dies stützt die Erkenntnis, dass eine Klinikclown Intervention die Befunde früherer Forschung repliziert (Erheiterung) und darüber hinausgehend erweitert (Transzendenz). Ein wichtiger Punkt war, dass die Studie im Vergleich mit Vorgängerstudien eine höhere interne Validität aufwies. Gleichzeitig gibt es aber Einschränkungen bezüglich der externen Validität der Studie, da nur ein Clown-Paar verwendet wurde und deshalb keine Effekte für unterschiedliche Arten von Humor untersucht werden konnten, und die Effekte nur Gültigkeit für die untersuchte Stichprobe bestehend aus erwachsenen Reha-Patienten hatten. Es wurden auch keine objektiven Messmethoden verwendet, und keine Effekte bezüglich interindividueller Unterschiede der Patienten untersucht, was im dritten Teil getan wurde.

Der dritte Teil befasste sich nur mit den emotionalen Reaktionen auf eine Klinikclown Intervention, und untersuchte den mimischen Gesichtsausdruck für Freude (Duchenne display; Ekman, 2003) im Vergleich zum mimischen Ausdruck unechten Lächelns (Non-Duchenne display; $N = 26$). Der Teil hatte zum Ziel, die subjektiv berichteten Gefühlszustände der Patienten anhand eines objektiven Messinstruments zu validieren. Die Studie untersuchte zusätzlich interindividuelle Unterschiede in der habituellen Empfänglichkeit von Patienten für Lächeln und Lachen. Trait Heiterkeit wurde in diversen Humorstudien als Faktor identifiziert, welcher die emotionale Reaktion und den nonverbalen

Ausdruck von Emotionen vorhersagt (Ruch & Hofmann, 2012), und wurde deshalb als vielversprechender Kandidat bei der Beeinflussung der emotionalen Reaktion von Patienten ausgewählt, welche mit einem Klinikclown interagieren. Die Studie identifizierte das Duchenne Lächeln als hauptsächlichen mimischen Ausdruck während der Klinikclown Intervention (76% aller Lächeln waren Lächeln der Freude), und demonstrierte eine hohe Übereinstimmung zwischen den subjektiven und objektiven Massen für Emotionen (Patienten, die häufiger Duchenne Lächeln zeigten, berichteten auch über mehr wahrgenommene Lustigkeit der Klinikclown Intervention, mehr positiven Affekt, mehr Transzendenz und mehr Freude an der Studienteilnahme). Interindividuelle Unterschiede in Trait Heiterkeit beeinflussten die Häufigkeit des echten Lächelns (Hoch Trait heitere Patienten zeigten mehr Duchenne Lächeln und berichteten über mehr positive Emotionen als niedrig Trait heitere Patienten), was darauf hinweist, dass der Erfolg einer Klinikclown Intervention unter anderem davon abhängt, wie sehr Patienten generell empfänglich für Humor sind.

Die Doktorarbeit leistet einen wichtigen Beitrag zum besseren Verstehen der durch Klinikclowns ausgelösten Gefühle bei Beobachtern und involvierten Patienten, und bietet ein passendes Messinstrument an, welches in zukünftigen Studien verwendet werden kann. Durch das Verwenden eines standardisierten experimentellen Designs in Teil Zwei und Drei wurde die interne Validität erhöht und die Wahrscheinlichkeit für systematische Fehler reduziert. Die hier dargestellten Ergebnisse sind für Clown Organisationen von Nutzen, welche Clowns ausbilden, da sie ganz klar für eine Verwendung von Clowns als erfolgreichen Auslöser von positiven Emotionen sprechen. Für die Clowns selbst kann es auch hilfreich sein zu wissen, welche Faktoren innerhalb der Patienten die Auslösung von positiven Emotionen mit beeinflussen, so dass sie schnell Anzeichen von Abwehr erkennen können und sich entsprechend und auf sensible Art und Weise verhalten können. Auf der anderen Seite war

das Setting der verwendeten Klinikclown Intervention in gewisser Weise künstlich, was möglicherweise einen Einfluss auf den Ausdruck der Emotionen bei den Patienten hatte. Die Stichprobe war eine eher kleine Gelegenheitsstichprobe mit einer großen Altersspanne, und einer Überrepräsentation von Männern. Zukünftige Studien sollten versuchen, die Ergebnisse in anderen Arten von Pflegeeinrichtungen mit anderen Stichproben zu replizieren, und idealerweise unterschiedliche Arten von Clowns mit unterschiedlichen Arten von Humor untersuchen.

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GENERAL INTRODUCTION

Why study hospital clowns?

During the last thirty years, clowns have been working in the health and care sector, aspiring to bring positive experiences and emotions to people with health issues. Hospital clowns[1] are professional artists that are specifically trained to integrate performing arts and humor-based skills, such as magic or puppetry, into medical environments to elicit smiling and laughter in order to promote people's well-being (Dionigi, Flangini & Gremigni, 2012; Wertgen, 2009). In some care facilities, laypersons with an affinity for clowning work as hospital clowns. Despite the level of their training, both professional and nonprofessional clowns shift from their private persona into a clown persona (Dionigi, Ruch & Platt, 2014; Peacock, 2009). Overall, clown organizations world wide agree on the unique and indispensable role clowns have in care settings (e.g., Foundation Theodora Hong Kong, 2016; Red Noses Clowndoctors International, 2013; The Humor Foundation Australia, 2016), which differs from the role of traditional circus clowns: hospital clowns establish a personal relationship with patients and distract them from their daily routines, pain and negative affect. They need to show appropriate emotions to contribute to the well-being and a good atmosphere in care settings, be sensitive to relationships between patients and relatives, and must have a comprehensive understanding of the care setting and the patient's feelings towards pain, illness, and death (e.g., Costa Fernandes & Arriaga, 2010; Henderson & Rosario, 2008; Ruch & Müller, 2009). Hospital clown interventions in care facilities are very common nowadays. Their origin dates back to 1986 when Michael Christensen founded the Big Apple Circus Clown Care Unit in New York, and professional clown doctors began

[1] Various terms exist for clowns working in care facilities (depending on country and organization). Examples are "therapeutic clown", "clown doctor" or "caring clown". Their work is called "medical clowning", "clown therapy", "clown visit", "hospital clown intervention", or "clown care". The present thesis uses the term "hospital clown". The work of hospital clowns is labeled "hospital clown intervention" (and synonymously "clown visit").

working in hospitals. Another important pioneer in hospital clowning is Patch Adams, a trained physician who in 1971 founded a home-based medical practice in West Virginia called the Gesundheit! Institute and treated sick people for free, transforming the doctor's role into a fun one (Adams & Mylander, 1993). Adams (2002) is convinced that the key to patients' faster recovery and healthier lives lies in the combination of *humor* (bringing fun to people and making them laugh) and *love* (treating patients with compassion and generosity, getting close to patients). Since then, many hospital clown organizations and federations worldwide (e.g., *Stiftung Theodora* in Switzerland, the *Theodora Children's Charity* in the UK and the *Red Noses Clowndoctors* Organizations in many European countries including Germany, Austria, Czech Republic, and Slovakia) have been established to introduce and support clowns' work in hospitals for children and adults, in nursing homes, rehabilitation centers and psychiatric institutions. A look at the service statistics of the Red Noses Clowndoctors International reveals the relevance of clown visits in health care. Between 1996 and 2013, there was a total of 11,917 clown visits, in which altogether 327 clowns interacted with 638,000 patients (Red Noses Clowndoctors International, 2013).

Despite their popularity and high frequency of usage in care facilities all over the world, research on the effectiveness of these humorous interventions is not sufficiently available (Dionigi et al., 2012). Also, to date we still lack knowledge about the postulated benefits for people in need of care. The main area of research on the effectiveness of hospital clown interventions is situated in children's and geriatric wards. Studies have shown that the presence of a clown helps to reduce the suffering and distress of hospitalized children (e.g., Costa Fernandes & Arriaga, 2010; Golan, Tighe, Dobija, Perel & Keidan, 2009; Vagnoli, Caprilli & Messeri, 2010; Vagnoli, Caprilli, Robiglio & Messeri, 2005), and raises the level of positive attitudes and life satisfaction in elderly patients (Hirsch, Junglas, Konradt & Jonitz, 2010; Wild, Wetzel, Gottwald, Buchkremer & Wormstal, 2007). Although hospital

clown interventions are also frequently used in facilities for nonelderly adults (e.g., rehabilitation centers, Red Noses Clowndoctors International, 2013), the effects of these interventions on adult recipients of all ages have not been studied in depth (Dionigi & Canestrari, 2016, give a review of the studies using adult samples).

This thesis will summarize the evidence on evaluations of hospital clown interventions and show that three important aspects are missing. First, hospital clown interventions aim at inducing positive experiences and smiling and laughter in care-dependent individuals (Dionigi et al., 2012), and qualitative studies propose that patients have a variety of distinct positive experiences during a clown-patient interaction (e.g., Ford, Courtney-Pratt, Tesch & Johnson, 2014; Linge, 2013). However, no empirical study has used subjective and objective markers of positive emotions to comprehensively assess the various and specific positive emotions elicited in patients during a hospital clown intervention. Second, the results from hospital clown evaluations are not consistent across studies, and the studies have methodological flaws. Specifically, many studies lack sufficient standardization and the use of comparison interventions, confounding variables are not identified or controlled and the assessment methods are often limited to subjective instruments, which are not specific for clowning, and do not provide an objective and reliable assessment of nonverbal behavior as marker of emotions. Third, research on the effectiveness of positive interventions showed that the success of an intervention – in terms of increasing happiness and well-being – depends in part on the fit between the type of intervention and the characteristics of the recipient (Lyubomirsky & Layous, 2013). No study so far has investigated whether hospital clown interventions (being one type of positive intervention) are beneficial for all patients that are involved, or whether some groups of patients benefit more, and why.

It is, therefore, the aim of the present thesis to contribute to the advancement of research on hospital clown interventions (e.g. with the use of sound assessment instruments

and controlled experimental designs) for a better understanding of the psychological mechanisms that lead to the postulated benefits in patients. The thesis is divided into three empirical parts, in which a total of four studies were conducted that aimed at: a) identifying the positive emotional states elicited by hospital clowns and the development of a clown-specific subjective assessment instrument, b) testing the *uniqueness* of the hospital clown intervention in comparison to other types of interventions (circus clown performances, nurse assessments) in their effects on the emotional states of the recipients, and c) investigating the influence of individual differences in the emotional reaction to a hospital clown intervention, using subjective as well as objective assessment methods.

The main aim of Part One was to identify and assess emotional states induced in observers watching videos of hospital clown interventions and to compare them with emotional states of observers of circus clown performances and nurse assessments. Therefore, an assessment instrument sensitive to the induction of clown-specific emotional states was developed (the *29 Clown Emotion List*, *CLEM-29*). Two empirical studies were conducted to examine the usefulness of the CLEM-29 in the evaluation of hospital clown interventions. Study 1 investigated whether the CLEM-29 represents state ratings sufficiently different from existing instruments for the assessment of emotional states. Additionally, it examined whether the CLEM-29 offers a more specific prediction with regards to the total amount of positive affect a patient receives in response to clowns in comparison to existing state scales. Study 2 aimed at identifying the unique effects of hospital clowns on the emotional state; therefore, it investigated the differences in elicited emotional states of observers in response to hospital clowns, circus clowns and nurses.

Part Two aimed at validating and extending the results from Part One to individuals involved in a hospital clown intervention (instead of watching videos in the lab), and utilized the CLEM-29 in a sample of adult patients in a rehabilitation center using a controlled

experimental design. The aims were twofold: to study the differences in elicited emotions of patients when presented with a hospital clown intervention and a nurse assessment, and to investigate possible differences in the emotional reactions of patients directly involved in the intervention and patients observing the intervention, applying a controlled experimental design in a natural hospital environment.

Part Three was centered on the question of whether a hospital clown intervention is a suitable method to enhance the emotional state in all recipients, or whether some groups of individuals benefit more from the intervention than other groups of individuals. One temperamental trait, *trait cheerfulness*, has been identified to have the ability to predict the emotional experience and observable behavior of individuals in several humor studies (Ruch & Hofmann, 2012). Therefore, it was defined as a potential factor in influencing the emotional state of patients during an interaction with a hospital clown. Both objective and subjective methods for the assessment of emotional states were utilized in a sample of patients involved in a hospital clown intervention to meet three aims: to investigate the facial expression of enjoyment (*Duchenne* smile; Ekman, 2003) of patients during an interaction with clowns, to validate the patients' self-reported emotional states with objective markers of nonverbal behaviors (the facial expression smiling and laughter), and to test the influence of trait cheerfulness on the emotional reaction of patients towards hospital clowns.

The structure of the following sections of the general introduction is as follows: First, as the thesis mainly deals with the investigation of emotional reactions of individuals, an introduction into the definition, classification, and measurement of emotions is given, paying special attention to positive emotions and their expression. Second, since a hospital clown is a specific type of humor stimulus, an overview of psychological humor research is presented (focusing on humor theories, personality influences on humor and the clown as humor stimulus). The third part reviews research on interventions that work to enhance the positive

emotional state of individuals and promote happiness and well-being. An introduction to positive psychology, positive psychological interventions and humor and health is followed by a summary of the empirical evidence on hospital clown interventions (which can be seen as one specific type of positive intervention). Then, it concludes with open questions and outlines the aims of the thesis.

Positive emotions and positive emotional states

In the past, psychology research has given much attention to the investigation of emotions and emotional states. To date there is no complete and exclusive theory on the origin, classification, functions and expressions of emotions (Frijda, 2000). However, researchers agree (Fröhlich, 2002) that emotions are individual's complex reaction pattern to external stimuli or events that are accompanied by changes on the physiological (e.g. change in heart rate or skin conductance), behavioral (e.g. flight when facing danger) and experiential level (e.g., feeling nervous, being scared). A distinction between emotion and emotional state (or affective state, mood) has not been made consistently in the literature (Parrott & Spackman, 2000), but it has been argued that emotional states are internal (feeling) states matching the correspondent emotion (Lewis, 2000). Whereas emotions are typically triggered in an instance by an internal or external event, emotional states last longer. For example, a person can be suddenly amused by an unannounced clown visit (emotion: amusement), and then be cheerful for the rest of the day after the clown has left (state: cheerfulness). It has also been argued that the states can be accompanied by the corresponding physiological changes as well as changes in facial, bodily and vocal behavior (Lewis, 2000).

Beginning with Charles Darwin in 1872, a lot of research has been conducted regarding universal and cultural influences on emotions and emotion expression. Results indicate that a discrete or basic set of emotions and emotion expression is very likely to be universal (Ekman, 1994; Izard, 1994; Keltner & Ekman, 2000), and that there is a high

accuracy in emotion recognition within and across cultures (Elfenbein & Ambady, 2002). In traditional classifications of basic emotions (Ekman, 1994), only one defined emotion denotes a positive quality – happiness (or joy) – and the rest have a negative quality (e.g., anger, fear, sadness, disgust). However, for the last fifteen years, the identification and description of positive emotions has been increasingly the focus of attention. Fredrickson (1998) argues that negative emotions are not the only ones to have an adaptive value for humans (e.g., survival in life-threatening situations) as they narrow the individual's thought-action repertoire (e.g., fear creates the urge to escape). She says that positive emotions do as well, as they "*broaden* the momentary thought-action repertoire, prompting them to pursue a wider range of thoughts and actions than is typical (e.g., play, explore)" (p. 239), and thus they *build* stable personal resources on a physical, social and intellectual level (Fredrickson, 1998).

Research on the so-called *broaden-and build theory of positive emotions* showed that positive emotions measured daily for one month in a sample of 86 students, predicted an increase in ego resilience (i.e., an individual's ability to successfully adapt to a changing environment) and life satisfaction, whereas negative emotions had no such effect (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009). In another study, participants had to prepare a speech under time-pressure, which elicited negative emotions (accompanied by anxiety-induced cardiovascular activity). Afterward, participants watched one of four films inducing either positive emotions (contentment, amusement), negative emotions (sadness) or nothing (neutral condition). Results showed that positive emotions worked to undo the cardiovascular aftereffects of a negative experience (Fredrickson, Mancuso, Branigan, & Tugade, 2000). The reversal of effects from negative experiences was also demonstrated in a study by Papa and Bonnano (2008), where the expression of positive emotions during a monolog task predicted long-term psychological adjustment (reduced stress two years later). When transferring the broaden-and build theory of positive emotions to understand hospital clown interventions, one

could assume that positive emotions elicited during a hospital clown intervention broaden the patients' perception of the situation and the scope of attention (e.g., change their focus from seriousness to play, from pain to positive experiences). This in turn could lead to more distal changes (build resources); for example, better coping mechanisms, higher levels of well-being during hospitalization, and/or faster recovery. However, before investigating whether positive emotions broaden the patients' perception of the situation and the scope of attention, and thus build resources to cope with a hospital stay, first research needs to identify the nature and variety of positive emotional states that a hospital clown intervention actually induces in hospitalized patients, and find a way to measure and quantify them.

Distinct positive emotions

For a long time, research on positive emotions has been limited to happiness (joy). However, recently researchers have postulated that multiple enjoyable emotions exist. For example, Ekman (2003) introduced 16 different facets of joy (five sensory pleasures plus amusement, contentment, excitement, relief, wonder, ecstasy, *fiero*, *naches*, elevation, gratitude and *schadenfreude*), and gives anecdotal evidence for each of them. Ruch (1993) introduced amusement as a facet of joy as the main positive emotion occurring in humorous situations[2]. Shiota and colleagues (2006) distinguished between seven different positive emotions, namely joy, contentment, pride, love, compassion, amusement and awe. Egloff and colleagues presented evidence for three distinct facets of positive affect, specifically joy, interest and activation (Egloff, Schmukle, Burns, Kohlmann, & Hock, 2003). Fredrickson (1998) also mentioned joy and interest, and additionally love and contentment.

Algoe and Haidt (2009) studied the emotions elicited when individuals observed an act of gratitude or excellence. They called the reactions of individuals to such skills or virtue the *other-praising emotions* (elevation, gratitude, admiration) as distinct patterns of positive

[2] A detailed introduction into the emotion of amusement is given in the chapter „Humor theories".

emotional experiences. The emotions elicited when observing others doing good differed in physiological experiences and action tendencies from emotions elicited when watching funny films. In their studies, elevation resulted in warm feelings in the chest and a low level of energy, while admiration elicited a high level of energy and chills. Gratitude was linked to muscle relaxation, and amusement resulted in light feelings and laughter. Individuals who described having felt other-praising emotions while observing others doing good were more motivated to doing things for other people. On the other hand while they experienced joy they were more likely to focus on their own good sensations[3]. Schnall, Roper and Fessler (2010) also studied distinct action tendencies of individuals after being exposed to different positive emotions. They found that feelings of elevation (induced by witnessing another person's altruistic behavior), but not feelings of amusement, predicted how much someone would help others with a tedious task. Cova and Deonna (2013) described a distinct positive emotion, *being moved*, that occurs at the end of an adverse situation (e.g. when observing courage or solidarity). The authors stated that the difference being moved has with joy is that the former is a more profound feeling state and the latter is light and superficial.

In sum, although authors disagree on the number and features of positive emotions, they all propose the existence of more than one. Additionally, they describe different state qualities – such as calmer and inwardly directed feeling states (e.g., contentment, elevation), and more active, outwardly directed feeling states (e.g., amusement, *schadenfreude*) – and their resulting action tendencies. From the research the question arises if, and how, distinct emotional state qualities can be assessed and distinguished. Two different methods to assess emotional reactions of individuals are commonly used: self-report and behavioral observation.

Subjective assessment of positive emotions

[3] Although the authors studied the other praising emotions only in individuals witnessing others doing good so far, they confirm that elevation is very likely to be elicited in the recipient of the act of kindness as well (Haidt, personal communication, August 3rd, 2012).

When researchers are interested in assessing the emotional states of individuals they can choose from a variety of self-report instruments, most of which are based on general models of mood representing broad positive and negative affectivity. Watson and Tellegen (1985) introduced a model of affect consisting of two broad, general dimensions labeled *positive affect* (PA) and *negative affect* (NA), which have emerged as the dominant dimensions of emotional experience in a variety of studies (Watson, Wiese, Vaidya, & Tellegen, 1999). They proposed a hierarchical taxonomic scheme in which the two uncorrelated higher order dimensions are each composed of several correlated, yet distinct, affective states. For example, PA contains discrete emotional states like “active” or “elated” which both represent a positive affective state, and therefore can be correlated, although they are distinguishable emotions on a behavioral and experiential level. Janke, Hüppe, and Erdmann (2003) introduced an instrument for the assessment of distinct emotional states, the Mood Rating Inventory (BSKE[EWL]), which is a short version of the German Adjective Check List EWL, and allows for the multidimensional assessment of a person’s momentary affective state. The BSKE(EWL) consists of 24 adjectives, all of which can be subsumed into one of the two broad dimensions of PA and NA. The authors claim that this instrument is sensitive to changes in emotional states, and can be used to assess effects of psychological interventions. Assuming that hospital clowns elicit a state of high PA (and possibly low NA), it might make sense to utilize this instrument in clown research. However, no study so far has used an instrument based on the model of PA and NA to assess emotional states induced by hospital clowns. It might be the case that although the BSKE(EWL) is indeed appropriate to assess changes in PA and NA on a more fine-grained level, it does not depict specific aspects of a PA and NA that relate to clown interventions. Consequently, it would miss some relevant emotional states that could be important to explain the effects of hospital clown interventions on recipients.

Studies within humor research concentrate on more specific emotional states occurring in individuals following the presence of humorous stimuli, that is, state cheerfulness, state seriousness, and state bad mood (assessable with the STCI-S<30>; Ruch, Köhler, & van Thriel, 1997). The concepts have been used in several studies to examine changes in the emotional state of individuals in humor experiments (see also the chapter "Humor theories").

Objective assessment of positive emotions: facial expressions

An individual's emotional response goes along with changes, not only in the experiential level (assessable through self-report), but also in the behavioral (assessable with observation methods) and physiological level (e.g. changes in heart rate and skin conductance). An objective way to validate individuals' self-reported emotional state is to analyze their facial expressions and infer their emotional state using the emotions reflected in the face. This can be done with the help of the *Facial Action Coding System* (FACS; Ekman, Friesen, & Hager, 2002). The FACS is an anatomically based, comprehensive, objective and reliable technique for measuring all observable facial movements. It describes 44 action units (AU's), which can be used to register any facial movements during a given time interval. The FACS allows for coding the frequency, intensity (FACS conventions of intensity threshold of A = trace, B = slight, C = marked to pronounced, D = severe to extreme, to E = maximum), timing, duration, laterality and symmetry of action units. Research using the FACS and subjective assessment methods has shown that the facial expressions of emotions are comparable across cultures (for an overview see Keltner & Ekman, 2000). Distinct negative emotions (e.g., anger, disgust, fear) have been shown to have specific facial displays enabling individuals across cultures to identify the nature of those emotions with high accuracy (e.g., Ekman, 1994). In contrast, Ekman proposed that specific pleasurable emotions do not all have unique facial expressions. Instead as they are likely to be facets of joy they are thus accompanied by the facial expression of joy, a smile (Ekman, 2003), albeit they can vary in

duration, intensity and vocalization (Platt, Hofmann, Ruch, & Proyer, 2013). Other researchers found distinct expressive features in different positive emotions. For example, Shiota, Campos and Keltner (2003) found differences in mouth opening and lip compressions. When participants were asked to produce the display of amusement, they tended to open their mouth meanwhile, whereas when they expressed pride, they slightly pressed their lips together. Participants expressed awe with a slightly open mouth, but no smile (and awe was also accompanied by raised eyebrows and widened eyes). Krumhuber and Scherer (2011) found differences in the emotions joy and relief. While joy was found to be expressed by a *typical smile*, relief was only characterized by a lip corner pull. But how is a typical smile described (and expressed)?

Smiling (the contraction of the zygomatic major muscle pulling the lip corners up) is not an unmistakable sign of a positive emotion. Individuals also smile out of politeness, or when trying to mask a negative emotion (e.g., Ekman & Friesen, 1982; Ekman, Friesen, & O'Sullivan, 1988). Research suggests that it is possible to distinguish between these different types of smiles (e.g., with the help of the FACS). The smile of genuinely felt enjoyment has been defined as the *Duchenne smile* (Ekman, Davidson, & Friesen, 1990), and it is characterized by the joint action of the zygomatic major muscle (pulling the lip corners up; AU12) and the orbicularis oculi muscle, pars lateralis (contracting the region around the eye producing crow's feet; AU6). Other forms of smiling without the contraction of the eye muscle (AU6), or with combinations of AU12 (with or without AU6) and AU's related to different emotional states (e.g., eyebrow lowering, lip corner depressor) have been defined as false or mixed smiles (Ekman & Friesen, 1982; Harris & Alvarado, 2005), occurring in situations when enjoyment is not genuinely felt (*Non-Duchenne smile*). For example, a false smile can occur when nothing much is felt, but a person is trying to pretend as if he or she is experiencing a positive emotion (phony smile, without AU6). Another group of smiles are

observable when individuals try to mask a different emotional state, such as sadness (masking smile, with other AU's involved; Ekman, Friesen & O'Sullivan, 1988).

There is wide empirical evidence showing that Duchenne smiles are a valid marker of enjoyment. In studies, they occurred spontaneously in situations when positive emotions were elicited and individuals simultaneously experienced enjoyment (e.g., Ekman, Friesen, & O'Sullivan, 1988; Frank, Ekman & Friesen, 1993, Harris & Alvarado, 2005; Keltner & Bonnano, 1997; Ruch, 1997; Sauter, McDonald, Gangi & Messinger, 2013). Also, observers of smiles rate Duchenne smiles as happier than Non-Duchenne smiles (Miles & Johnston, 2007). However, Duchenne smiles have also been observed in negative (Ekman et al., 1988; Keltner & Bonnano, 1997) and posed contexts (Krumhuber & Manstead, 2009), leading some authors to criticize the validity of the Duchenne smile as a reliable marker of enjoyment. Krumhuber and Manstead (2009) found in their study that the smiles differed in intensity: The intensity of the Duchenne smiles in the posed context was higher than in the spontaneous condition. The authors conclude that when posing a smile of enjoyment, participants put on a stronger smile (which also activated a contraction of the upper face muscles) than when smiling spontaneously (a spontaneous reaction to amusing stimuli). The question is whether smiles from posed expressions should serve as a cue for spontaneous expressions. In the spontaneous condition, participants sat alone in a room and watched funny films. Research showed that the intensity of emotional reaction depends among other factors also on the social context (contagious effect of laughter; e.g. participants laughed more when watching a funny film with a virtual companion than alone, Hofmann, Platt, Ruch, Niewiadomski, & Urbain, 2015); hence, it can be expected that a spontaneous reaction of amusement while sitting alone in the lab on average does not elicit high intensities of enjoyment smiles. On the other hand, when being asked to pose with a certain expression, individuals might make a strong effort to fulfill the task (and hence produce stronger expressions). It is doubtful that in a natural

environment a posed smile will produce a higher intensity than a spontaneous smile of enjoyment. Other results in the Krumhuber & Manstead (2009) study speak in favor of the Duchenne smile as valid marker of positive emotions. Duchenne smiles were accompanied by higher subjective ratings of positive experience in a spontaneous condition than in a deliberate condition. Also, Duchenne the smiles in the spontaneous condition were rated as more genuine and amused by an independent group of judges. The judges furthermore rated high intensity Duchenne smiles to reflect more enjoyment than low intensity ones (Krumhuber & Manstead, 2009).

Recently, the question has been raised whether the joint contraction of the zygomatic major muscle and the orbicularis oculi muscle, pars lateralis are the only and unmistakable markers of the Duchenne smile. According to Ekman and Friesen (1982), the Duchenne smile may be accompanied by a tightening of the eyelids, as well as mouth opening and jaw dropping (especially during laughter), but no other facial action. Krumhuber and Manstead (2009) studied Duchenne smiles with and without further facial actions, and found that smiles were rated as more genuine and amused when they had less nonpositive facial actions (such as frowning and lip pressing). Mehu and colleagues identified the AU6 as reliable facial muscle for the prevalence of a genuinely positive emotional state (Mehu, Mortillaro, Bänziger & Scherer, 2012). Darwin (1872) on the other hand proposed that during strongly pronounced laughter (which can be seen as high intensity Duchenne smile; Ruch, 1993) other facial actions are also present; for example, the eyebrows are lowered, causing a frown. A recent study of facial features in historic illustrations of different types of laughter found both frowning and nose wrinkles in historic illustrations of joyful and intense types of laughter. However, when participants rated the historic illustrations on their level of expressed joy, the frowning did not seem to be associated with a high perception of joy (Ruch, Hofmann, & Platt, 2013). In another study, frowning and nose wrinkling during a Duchenne smile were

found to be associated with *schadenfreude* (Hofmann, Ruch, & Platt, 2012), which is a facet of joy (Ekman, 2003).

Research with laughter animations suggests that the presentation mode plays a role. In dynamically presented high intensity Duchenne laughter, eyebrow-lowering frowning is associated with a natural (positive) element of the laugh, but when frowning occurred during a low intensity (or statically presented) Duchenne smile, it led to increased perceived maliciousness (Hofmann, 2014). Krumhuber and Manstead (2009) also identified the presentation mode of a smile as a distinctive feature for the authenticity of the enjoyment smile. When smiles were presented in dynamic form, participants rated them as more genuine and amused and they were able to discriminate between spontaneous and posed smiles.

In summary, the role of frowning and nose-wrinkling in Duchenne smiles and laughter is still unclear. However, results indicate that in combination with smiles of lower intensity, frowning and nose-wrinkling are more likely to be signs of Non-Duchenne smiles (Krumhuber & Manstead), whereas in high intensity Duchenne smiles (and Duchenne laughter), these features seem be associated with genuinely felt enjoyment (Hofmann, 2014).

Humor research

One positive emotion has been given special attention in research over the last two decades: the positive emotion of amusement (or exhilaration[4]). Amusement usually is elicited in humorous situations and higher levels of amusement typically go along with more frequent and intense Duchenne smiles (Ruch, 1993, 1997). Amusement is the only positive emotion explicitly linked to laughter (Ekmann, 2003), where smiling and laughter are seen on one continuum. Duchenne laughter typically occurs at higher levels of reported amusement, while Duchenne smiling occurs at lower levels (Ruch, 1993). As a hospital clown is a figure who

[4] The emotion was also referred to as amusement, hilarity or mirth (Ruch, 2009). The present thesis uses the terms exhilaration and amusement as emotional response to humor interchangeably.

uses humor with the aim to elicit a positive emotional state in individuals (Dionigi et al., 2012), special attention is given to humor in the following paragraphs.

Humor theories

Psychological researchers have studied the functions of humor, perception of and reactions to humorous stimuli for over a century (e.g., Hofmann & Ruch, 2013; Martin, 2007; Ruch & Auerbach, 2011), and their research has preceded the beginning of hospital clown research by many years. Among the most common theories of humor is the *relief* or *psychoanalytic theory* (Freud, 1905), which sees humor as a regulatory mechanism to defend the individual from negative feelings. Another theory is the *superiority theory*, which implies that the positive experience of humor stems from a sense of superiority derived from the disparagement of others. The last common theory is the *cognitive theory* of humor, which mostly describes and investigates incongruities in jokes and cartoons and their solution (understanding the joke) leading to the *humor response*, that is, the perception of a stimulus as funny (Martin, 2007, and Ruch, 2008, review the common humor theories in detail).

Ruch (1993) argued that the cognitive concept of the humor response is too narrow as it omits parts of the affective response to humorous stimuli such as physiological changes and affective experiences. He introduced the emotion labeled exhilaration (from the Latin root *hilaris*) to describe an individuals' emotional response to a humorous stimulus. Exhilaration has been defined as either the process of making cheerful or the temporary rise and fall of a cheerful state (Ruch, 1993). It includes various reactions at a behavioral (e.g., smiling and laughter), physiological (e.g., changes in heart rate and skin conductance) and experiential level (e.g., changes in emotion, mood and frame of mind; see Ruch, 2005; Ruch & Köhler, 2007). Considering emotion taxonomies, exhilaration may be seen as the facet of happiness (or joy) most strongly aligned with laughter.

Humor and temperament

Numerous studies show that individuals have different habitual tendencies to experience and express emotions according to their personality (Keltner, 1996). Ruch and colleagues argue that there are interindividual (between individuals) and intraindividual (across situations and time) differences in the appreciation of and reaction to humorous stimuli (Ruch, Köhler, & van Thriel, 1996, 1997). They introduced a state-trait model of cheerfulness, seriousness, and bad mood (see Figure 1). Rather than denoting a "sense of humor" as a personality characteristic, which to date is still more of a folk-concept and has not been established in humor research as a scientific construct (Ruch & Hofmann, 2012), the model emphasizes a temperamental approach to humor describing individual differences in humor-related behavior.

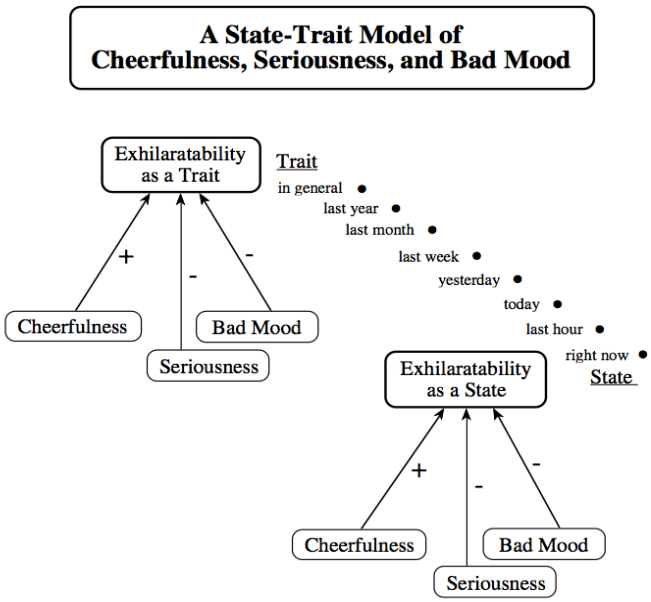

Figure 1. A state-trait model of cheerfulness, seriousness, and bad mood (Ruch, Köhler, & van Thriel, 1996).

In a serious frame of mind or in a bad mood, the threshold of exhilaratability is enhanced. In a cheerful state, it is lowered (Ruch & Köhler, 2007). Analogously, a cheerful temperament facilitates the expression of humor, while trait seriousness and trait bad mood are seen as dispositions for different forms of humorlessness. Changes in humor-related states

can reliably and validly be measured with the standard state version of the State-Trait-Cheerfulness-Inventory consisting of 30 items (STCI-S<30>; Ruch, Köhler & van Thriel, 1997), while the traits can be measured with the standard trait version with 60 items (STCI-T<60>). Following historic literature (Lersch, 1962), Ruch and colleagues distinguished different facets of state and trait cheerfulness. A cheerful mood, which is marked by a more tranquil and composed state, is distinguished from hilarity, which is marked by a more shallow and outward merry mood. Likewise, different facets of trait cheerfulness have been introduced, some of which relate to a composed view of adverse life circumstances (cheerful composure) while others relate to a merrier temperament (a low threshold for smiling and laughter, hilarity).

The concept of cheerfulness has been used in a variety of studies to predict people's reactions in humor experiments with various humor stimuli, and using the Duchenne smile and laughter as an indicator of the induction of a positive emotional state (for an overview see Ruch & Hofmann, 2012). For instance, Ruch (1997) conducted an experiment in which a clowning experimenter involved individuals in a humorous and playful interaction. He demonstrated that individuals involved in the clowning interaction showed more frequent and more intense Duchenne smiles than individuals involved in a neutral interaction. The intensity of facial amusement was highly correlated with subjective ratings of state cheerfulness after the experiment ($r = .63$, $p < .001$), and to a lower extent to state seriousness ($r = -.42$, $p < .05$). The study showed also that trait cheerfulness moderated the level of amusement: high trait cheerful subjects had higher frequencies and intensities of Duchenne smiles than low trait cheerful subjects. In another study, Beermann and Ruch (2011) confronted participants with distorted images of themselves and simultaneously recorded the facial expressions of participants. Again, subjective ratings (here: funniness ratings) and facial exhilaration were positively correlated ($r = .62$, $p < .01$). Furthermore, those participants who reported to

habitually laugh more at themselves showed more frequent and more intense Duchenne smiles. Research on humor and laughter has shown that the intensity of the two measures for humor appreciation (self-reported funniness and facial expression) is typically moderately correlated between .30 and .50 (and sometimes higher, depending on the method and design used; e.g., Reisenzein, Studtmann, & Horstmann, 2013; Ruch, 1995).

A clown can be seen as a humor stimulus that (if successful) induces amusement in individuals, which then should be visible (and measurable) on the physiological, behavioral and experiential level. Furthermore, based on evidence provided by humor research, it can be assumed that the level of amusement in reaction to a clown depends on an individuals' level of state and trait cheerfulness. An advantage of using the FACS to investigate positive emotions in response to humor is that genuinely felt positive emotions can be distinguished reliably from masked emotions. This could be of importance in a social situation such as a hospital clown intervention, in which more than one patient is often involved, and sometimes observers are present (family members, staff, researchers). For example, a clown might trigger a negative emotional state, and the patient could produce a false smile out of politeness or embarrassment. This could then be detected by analyzing the occurrence of Non-Duchenne smiles and the correlations between Non-Duchenne smiles and subjectively rated emotional states.

The clown as humor stimulus

The term clown stems from the Latin term *colonus* or the Old North term *klunni*, both meaning farmer (also *country fool*[5], von dem Borne, 1993). Clowns, or clown-like figures, have a long history, and the art of clowning has existed in various forms for thousands of years (Peacock, 2009). A clown can have a dual nature, a character with two ostensibly opposite traits representing strength and weakness, which was already present in precursors of

[5] German term *Bauerntölpel*

modern clowns – the comic figures in Greek mythology (von dem Borne, 1993). On the one hand, a clown is an opponent using wit, sharp mockery and hoaxes to rebel against an existing regime and thereby enjoys a liberation from the commonality. In the middle ages, court jesters appreciated the privilege of a fool (German term *Narrenfreiheit*). They were given a great freedom of speech, thus, they often were the only persons who were allowed to speak against the authorities and consequently were able to influence political and societal decisions. The role of clowns as critics of society and political commentators is still visible today, for example in the *Clandestine Insurgent Rebel Clown Army* (CIRCA; www.clownarmy.org). The CIRCA is a group of anti-authoritarian, left wing activists originated in Great Britain, who dress up as clowns and peacefully protest against war, globalization, militarism and other issues relevant to society.

On the other hand, the clown can be the target of the joke himself, being a clumsy, sometimes deformed or seemingly odd figure (von dem Borne, 1993). In the 16th century, a *humorist* was a person who had odd features or even a handicap that made him look ridiculous, and thereby an object exposed to mocking. A person who had the talent to parody the humorist (and thus appearing odd, clumsy, eccentric and so on) was a *man of humor* who deliberately and successfully made other people laugh at him (Schmidt-Hidding, 1963). The different natures of clowns can be united within one person, but in modern circus clown performances, they are often represented by a clown duo: the Whiteclown (or Whiteface: the reasonable, decision making, often pompous, bossy character with a sense of importance mocking his opponent) and Auguste (the fun loving, pure in heart, clumsy, more emotional character; Dionigi et al., 2012). Whiteface is more intelligent and in control while Auguste is the butt of the jokes and tricks of his partner. The paired work of clowns is very common not only in the circus, but also among hospital clowns (Dionigi et al., 2012).

McGhee (1979) sees humor as a form of play (with ideas), and postulates that incongruities are appreciated only if presented in a playful context. Clowning has been described as non-serious playing in which “a special world is created where people can make the rules, rearrange time and assign value to things” (Schechner, 1988, p. 11). Play is “a free activity” (Schechner, 1988, p. 13) where one makes one’s own rules. Peacock defines clowns in terms of their “ability to play with the audience and to create a sense of *complicité* with them by using play to connect with them” (2009, p. 14). One element is that the clown interacts and communicates with his audience and thereby connects with them. Peacock (2009) also speaks also of an unconditional love for the audience. Other elements of clowning are that clowns have “a way of looking at the world that is different, unexpected, and perhaps even disturbing”. Von dem Borne emphasizes that clowns show us their struggles with daily adversities, their never-ending optimism and their readiness to let others laugh at them. According to von dem Borne (1993), clowns give people a gift by letting them laugh at their shortcomings and make them forget about their own deficiencies in life, therefore, they are making a sacrifice for their audience. So, two key elements seem to occur in various types of clowning: playfulness/humor in various forms, and some sort of connection with the audience.

Peacock (2009) suggests that clowning routines and actions can be classified into the following types: interruption of ceremony (e.g., interruption of the ringmaster in circus), subversion and parody (e.g., satirize events), physical skill (acrobatics, juggling, contortion, high wire), incompetence (provoking laughter by falling, tripping), interaction with objects, and interactions with other clowns, status, or food. Hospital clowns transfer many of these characteristics to the hospital environment. Clowns in hospitals do not only simply perform (like circus or stage clowns), but they also interact with patients, members of staff and visitors. They use their performing skills and techniques with the aim to alleviate pain and

suffering, establish a relationship with the patients and create a positive atmosphere in hospitals, thus, contribute to their well-being and quality of life (e.g., Ford, Courtney-Pratt, Tesch & Johnson, 2014; Linge, 2013; Nuttman-Shwartz, Scheyer & Tzioni, 2010; Rösner, 2010; Ruch & Müller, 2009). Hospital clowns have been described as fools who can disarm painful situations (using clumsy and incompetent behaviors), or give children a sense of power (van Troostwijk, 2006). They work with elements of humor such as incongruity, surprise, slapstick or superiority, for example, by surprising patients and thereby interrupting the daily hospital routine, or helping sick children feel that they in charge and outrank the hospital staff (Schwebke & Gryski, 2003). Niessen (2013) videotaped and categorized techniques used by a hospital clown during his interactions with patients with dementia in a nursing home, and found the following main actions and techniques: music (clown humming or playing an instrument) with or without movement, dance (clown dancing with a patient), movement (clown and patient playing with balls, balloons, or a frisbee), inappropriate and clumsy behavior (clown tripping, jumping up and down while shaking hands), magic, and tactile interactions (hand-shaking, bodywork with a puppet).

The literature suggested that a person who creates a clown character mostly remains in the same clown role throughout his or her professional career. The *clown persona* is unique, and, although not identical to the person's persona, it is often developed out of the individual's personality (Dionigi, Ruch & Platt, 2014; Fehling, 2013; Peacock, 2009). Clowns working in hospitals often are assigned to a specific setting or institution (e.g., children's wards, or adult rehabilitation facilities) because they are specially trained for working with the respective target group and their clown persona fits well within the requirements of that group (Matuella, personal communication, January 2013).

Generally speaking, clowns are viewed as good-hearted artists who wish to entertain their audience and make them laugh with the use of humor. Visiting shows containing clown

performances (e.g. classical circus, comedy, British pantomime, and so forth) are very popular leisure activities for many people. However, when describing the clown figure, negative characterizations also need to be taken into account. In modern media, clowns are sometimes portrayed as being evil or cruel; for example, the character *Pennywise* from the book *It* by Stephen King or the *Joker* in the movie *The Dark Knight*, who is an insane villain murdering innocent people for his own pleasure. The famous TV show *The Simpsons* contains a morally doubtful clown figure called *Krusty the Clown*, who is displayed as marked by life, is corrupt and abuses alcohol and drugs. In addition to dark and evil clown figures in the media, some people think clowns are annoying, embarrassing, and even scary (an overview of negative clown figures is given in Rodriguez McRobbie, 2013). The pathological fear of clowns is called *coulrophobia*, which in the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 2000) falls into the category "specific phobias". However, to date there is only anecdotal evidence on this specific form of phobia, and no study has investigated the prevalence of coulrophobia among children or adults or its possible origin and development. In the following section, research on the effects of clowns and hospital clown interventions on individuals will be reviewed, with a special focus on the effects on the emotional state of individuals elicited by clowns.

Positive psychology, positive interventions and humor

In this section, first, an introduction is given to the science of positive psychology and its subdomain positive psychological interventions, under which hospital clown interventions can be subsumed. Second, the empirical evidence on the benefits of hospital clown interventions for children and adults in the care setting is summarized.

Introduction to positive psychology, health and well-being

Despite the widespread and long-term service of hospital clowns in health care, research on the effects of these interventions on individuals is sparse (Dionigi et al., 2012).

Psychology research has had a long tradition of studying abnormal behavior, trauma, and disorders. Only recently, there has been a shift in research to overcome this negativity bias in psychology. In 1998, Martin Seligman, as president of the American Psychological Association (APA), brought the term *positive psychology* forward, and a lot of research has been conducted on "the good life" ever since (Seligman & Cszikszentmihalyi 2000). Positive psychology is an umbrella term for theories and research about what makes life most worth living (Peterson & Park 2003). It aims at exploring and supporting human flourishing, positive experiences, positive traits and positive institutions (Peterson & Seligman, 2004). It is assumed that positive institutions facilitate the development of positive traits, which in turn facilitate positive experiences (Peterson & Park, 2003).

Not surprisingly, a growing interest in institutions where people go to recover from illness, and even face death, has emerged (e.g., Peterson, Park & Seligman, 2006). Research in health psychology and positive psychology showed that a patient's frame of mind, beliefs, trust in professionals, emotional experience, and personality characteristics can influence the course of an illness, coping and well-being (cf. Marks, Murray, Evans & Estacio, 2011). For example, research showed that individuals who generally have a high emotional stability report lower levels of stress and negative appraisals during and after adverse situations (e.g., Gunthert, Cohen, & Armeli, 1990). Danner and colleagues studied handwriting autobiographies from Catholic nuns and found that nuns who had more positive emotional content in early writings had a lower risk of mortality later in life (Danner, Snowdon, & Friesen, 2001). Folkman and Moskowitz (2000) argued that positive affect has adaptational significance for individuals during stressful events: individuals high in trait positive affect are less likely to develop symptoms of depression than individuals low in trait positive affect.

Research on a specific subcomponent of personality related to health and well-being – the sense of humor – precedes the contemporary research on positive psychology (Ruch,

2007). Although there are still open questions regarding the interplay between the sense of humor and indicators of health (Kuiper & Martin, 2007; Ruch, Rodden & Proyer, 2011), was well as how to correctly measure of the sense of humor (Ruch, 2008; Ruch & Heintz, 2014), studies showed positive relationships between different conceptualizations of sense of humor and health outcomes (Martin, 2001; Ruch, Rodden & Proyer, 2011). Looking at the temperamental basis of sense of humor, studies showed that individuals high in trait cheerfulness in comparison to individuals low in trait cheerfulness: 1) experience more positive affect and life satisfaction, 2) have a higher robustness of cheerful mood under adverse circumstances and a faster mood recovery, 3) have a higher pain tolerance when watching a funny film, 4) report higher levels of state cheerfulness when facing negative events and stress, and 5) report using humor as a coping strategy (a summary of findings is given in Ruch & Hofmann, 2012). An eight-week humor training, conducted by several humor professionals based on McGhee's (1999) model, increased the level of the sense of humor, trait cheerfulness and life satisfaction of adult participants (Rusch & Stolz, 2009).

One central goal of positive psychology is the development and evaluation of positive psychology interventions, which are "treatment methods or intentional activities that aim to cultivate positive feelings, behaviors, or cognitions" (Sin & Lyubomirsky, 2009, p. 468). A meta-analysis of 51 such interventions revealed that they indeed enhance well-being and decrease depressive symptoms (Sin & Lyubomirsky, 2009). The promotion of well-being and cultivation of positive feelings is also the main goal of clown programs that focus on a specific group of individuals (the sick and suffering) in a specifically adverse environment (hospitals; Dionigi et al., 2012). Therefore, hospital clown interventions are a natural focus for positive psychological research. However, only a few empirical studies have looked at these special types of interventions. The majority of those have focused on negative outcome variables such as the reduction of pain, depression or worries, while only a few studies

investigated positive effects (positive experiences, well-being). In the following paragraphs, the results of hospital clown (and related humor-based) intervention studies are reviewed.

Effects of hospital clown interventions on psychological outcomes

Several studies showed that compared to a control group with no intervention a hospital clown intervention successfully reduces preoperative anxiety in children undergoing medical procedures or surgery (Berger, Wilson, Potts & Polivka, 2014; Costa Fernandes & Arriaga, 2010; Golan et al., 2009; Vagnoli et al., 2010; Vagnoli et al., 2005; Viggiano et al., 2015), the need for sedation in children undergoing magnetic resonance imaging (Viggiano et al., 2015) and the duration of children's crying during a painful botulinum toxinum injection (Hansen, Kebaek, Martinussen, Kragh & Hejl, 2011).

In contrast, Meisel, Chellew, Ponsell, Ferreira, Bordas and Garcia-Banda (2010) could not detect a difference in the level of preoperative distress in children who are in a clown group and those in a control group. However, did find a (non-significant) reduction in post-operative maladaptive behaviors in the intervention group. The above-mentioned studies were all conducted in a natural setting (the clown visit was included in the daily routine and procedures), so none of the studies used a sufficiently standardized and controlled experimental design. Mostly, the child and the clown were not alone, so the other people in the room might have influenced the emotional state as well. For example, in the studies by Costa Fernandes and Arriaga (2010) and Vagnoli and colleagues (2005, 2010), the parents were present in addition to the clown. Of all the studies that reported using a control group design, only one study (Viggiano et al., 2015) actually implemented different interventions in addition to a clown intervention (the presence of a dog and live music). However, the results described in their paper only compared the overall effect of the psychological interventions (an averaged score of the three types), but no specific effects of the single interventions in

comparison to the control group[6]. Another more recent study used a combination of an art therapy and a clown intervention, to reduce children's preoperative anxiety (Dionigi & Gremigni, 2016), but it did not test the two individually against each other.

In samples of older recipients that were subject to hospital clown interventions, a clown visit has been shown to be useful in reducing disruptive behaviors of adult hospitalized patients in a psychiatric ward (Higueras et al., 2006). Furthermore, Low et al. (2013) studied the effect of a 9-12-week humor therapy program (carried out once a week in 35 nursing homes by professional clowns assisted by trained nursing staff) in a large sample of elderly people. They found that in 189 people of the intervention group, the level of agitation was significantly reduced compared to a control group of 209 people. Other important outcome variables, such as the level of depression or quality of life, did not differ between the two groups. As one third of the subjects participating in the humor therapy program were unable to fill out self-report questionnaires due to dementia, members of staff evaluated the variables for these subjects. Hence, the assessment of the outcome variables varied from subject to subject, and the authors reported that self- and peer report correlated only mildly to moderately.

Looking at positive outcome variables, Pinquart, Skolaude, Zaplinski and Maier (2011) found an increase in self- and parent reported psychological well-being before and immediately after a clown visit in a group of 50 children compared to a control group with 50 children watching TV or talking to parents. However, they did not find the same results in the follow-up four hours after the clown intervention. In fact, there was no change in self- or parent reported perceived physical well-being (feeling ill, headache, tummy-ache, tiredness, energy). The study used an overall index for positive affect, but did not distinguish between

[6] Personal communication with a co-author of the study revealed that all three single interventions had the hypothesized effects (reduced anxiety and need for sedation in children undergoing magnetic resonance imaging in comparison with a control group; Giganti, 2016), and the dog intervention worked best (n.s.) in reducing anxiety.

different positive emotional states. Wild and colleagues (2007) studied the effects of a six-week clown intervention program with one visit per week on a ward for geriatric patients with acute psychiatric disorders. They found a higher acceptance score of the intervention after the 6 weeks, but no effects on the self-rated positive mood. Hirsch et al. (2010) examined the influence of humor therapy (humor group sessions) on elderly people suffering from depression. They discovered an increase in resilience and life satisfaction as well as a higher level of cheerfulness compared to a control group without humor therapy, but there was no difference in their level of depression at the end of the study. In Costa Fernandes and Arriaga's (2010) study, the researchers observed clown interventions for children undergoing surgery, and concluded that the interactions with a clown raised the level of positive affect (operationalized by valence and arousal, which was assessed with two bipolar graphic scales ranging from happy to sad, and from high to low arousal). None of the studies presented in the previous paragraphs used an objective method for a reliable assessment of nonverbal markers of positive emotions (or markers for the reduction of negative emotions).

Effects of hospital clown interventions on physical outcomes

Friedler and colleagues (2011) studied the effect of a hospital clown intervention on women undergoing in vitro fertilization with a surprising result: they found a significantly higher rate of pregnancies in the intervention group (a male clown entertained the women after embryo transfer) compared to a control group (no clown present). The allocation of the women in the intervention and control groups was not randomized, and the study lacked standardization. The paper did not give a description of the exact procedure of the clown intervention, but upon request the first author explained the process. He said that after embryo transfer, all women lay in bed for approximately one hour in a big room with different people coming and going (the women's' partners might also be present). In this room, the clown intervention took place for the intervention group (Friedler, 2011, personal communication).

In another study investigating physical outcomes using a sample of 19 adult patients suffering from severe obstructive lung disease, a clown was able to reduce hyperinflation (and increase the level of state cheerfulness; Brutsche et al., 2008). An advantage of this study was the researchers' use of an objective assessment tool for coding smiling and laughter (FACS), but the authors did not report the relationship between the objective and subjective level of cheerfulness. Also, no comparison intervention was utilized to test the specificity of the clown intervention in its effect on the physiological variables (both the intervention group of patients with chronic lung diseases and the control group of healthy adults responded to the intervention with smiling and laughter). In another study, an interaction of a clown in the intervention group (21 children hospitalized for respiratory pathologies) caused a decrease in the level of self- and nurse assessed pain, lowered diastolic blood pressure, respiratory frequency and temperature compared to a control group (22 children) without a clown intervention (Bertini, Isola, Paolone & Curcio, 2011). Again, the procedure was not standardized, and although the study assessed a wide range of physical parameters, it did not include any measure of the emotional state of children. The authors conclude that the psychological mechanisms underlying the observed physical effects (e.g., the effect of humor on the patients' perception, attitudes and emotions) are still not understood.

A study using heart rate and blood pressure as physical measures for preoperative anxiety of children found no difference in physical measures between the intervention group (a clown and hospital staff wearing funny clothes and acting silly in the preoperative area) and the control group (Berger et al., 2014). Another study combined a physical measure of anxiety (systolic blood pressure and pulse) with a subjective assessment of anxiety. In comparison to a control group the researchers found a reduction in both parameters in children and their parents after surgery when they had participated in a clown intervention before the surgery. In addition, children in the intervention group also reported less post-

surgery pain (Bok Yun, Kim & Jung, 2015). In their study, possible influencing factors were not controlled, limiting the generalization of the findings. Also, the design was quasi-experimental and lacked randomization of assigning the children to the groups, and there was a time delay between the data collection in the intervention group and the control group. Furthermore, the level of trait anxiety was not taken into account as a habitual measure of anxiety in children and their parents, which could moderate the effects of the intervention.

Qualitative studies on hospital clown interventions

Linge conducted a series of qualitative studies with interviews from hospital clowns (2008), children and adolescents taking part in hospital clown interventions (2012), and hospital staff observing the interactions between clowns and children (2011). She concludes that hospital clowns "create a magical safe area where demands and adjustment were temporarily set aside and where the lighter side of life took precedence" (Linge, 2013, p. 1). She also found that clowns apply a mixed method of humor and empathy and thereby create an environment between fantasy and reality, elicit surprise, joy, acknowledgement, appreciation, and a close connection to the clown (*magical attachment*) in children and adolescents. Nuttman-Shwartz, Scheyer and Tzioni (2010) analyzed reports written by hospital clowns to document their work, and found a clown-reported impact of the interventions on patients' quality of life (in forms of observed smiles, tears of touch and joy, hugs, invitations to visit again) as well as on relatives and visitors (the clowns reported receiving recurring positive feedback from staff and relatives, and described the relief visitors felt from the "burden that accompanied their prolonged stays with loved ones", p. 590).

Ford, Courtney-Pratt, Tesch and Johnson (2014) observed hospital clowns during their work and interviewed children, parents and staff members. They describe the encounter between the clown and the child as moments of fun, magic and transformation of sickness, pain and boredom into fun and play. Parents and staff observed that the children "sparked

up", "cheered up" and "broke the tension" (p. 289). In addition, parents felt relieved when seeing their children smile and laugh as they forgot their concerns about their medical condition and felt in control, powerful and confident. The study also found some participants reacted negatively towards the clown interventions, especially adolescents. One adolescent stated "it's not cool to like a clown when you're a teenager" (p. 292)[7]. Although few in number, some children also did not enjoy the visit and pretended to be asleep while the clown was interacting with another child in the room. The researchers observed a great sensitivity in the clowns towards reluctance, and described that the clowns respected the wishes of children and adolescents.

Kontos, Miller, Mitchell and Stirling-Twist (2015) qualitatively investigated interactions between a clown duo and residents of a nursing home in a 12-week program with 23 patients with dementia, and they identified three major strategies the clowns used in their interactions with the residents. *Affective relationality*, that is, responsiveness of the clowns to residents' expressions of joy as well as sadness, was described as joint laughter and music and was often additionally displayed without sounds (for example through nonverbal signs of pleasure such as bright eyes, engaged looks, broad smiles, and tears in moments of shared sadness). *Reciprocal play* occurred when the clowns used physical games, tricks, and jokes, and residents responded with laughter and a playful reaction ("moments of fantasy"). *Co-constructed imagination* was the joint creation of stories by clowns and residents, and a shift from reality to pretense and imagination. The authors highlight the clowns' ability to activate and engage elderly people with dementia by using interactions.

Summary of research evidence and conclusion

[7] Linge (2012) found similar reactions in a few children and adolescents during a hospital clown intervention (initial fear of younger children when seeing the clown for the first time, boredom in older children), Kingsnorth, Blain and McKeever (2010) observed that some children disliked some of the clowns' games and tricks, but they did not observe any signs of fear in children involved in a hospital clown intervention. Battrick and colleagues (2007) reported that only three out of 49 children stated that they disliked clowns.

In summary, the reviewed studies show that hospital clown interventions indeed can have a beneficial effect for patients. Positive effects in terms of a reduction of negative emotions, a change in physical parameters and an increase in positive affect have been demonstrated, mostly in studies with children and elderly people. The effects found in the studies were compared to a control group without an intervention, and in those with children as participants usually the parents were present in one or both groups. The reviewed studies can be classified as quasi-experimental as they all took place in a natural hospital environment, which made sufficient standardization difficult to obtain (and hence threatens internal validity).

The studies show psychological or physical effects ascribed to clown interventions and they attribute the results to the elicitation of positive experiences by the clowns. However, there is a lack of studies that precisely describe these experiences and objectively demonstrate a rise in positive emotions. In studies looking at positive outcomes, measures were very broad (positive affect, cheerfulness, life satisfaction), and did not distinguish between different forms and qualities of positive experiences. Nevertheless, qualitative studies and narratives of clowns working in the field suggest that there is a great range of different positive emotional states elicited during the interaction between a hospital clown and a patient. In order to understand the psychological mechanisms that might lead to the observed changes, such as less pain, lower heart rate or decreased anxiety, it is important to first study the assumed emotional changes elicited in individuals during a hospital clown interventions in a more detailed way. That way, the observed changes could be proven to be unique effects of hospital clown interventions, and could not be replaced by other kinds of interventions (such as attention in form of a caring nurse, watching a funny film or having an animal in the room). So far, no study has made an attempt to identify and assess the variety and *uniqueness* of positive emotional states in response to a hospital clown intervention.

Summary and open questions

In the previous chapter, a survey of the literature on emotions, humor, positive psychology and hospital clown interventions was conducted. Research argued that, when successful, the clown is likely to elicit a positive, cheerful state in individuals, accompanied by smiling and laughter. Furthermore, the literature suggests that the clown might also trigger positive emotional reactions that transcend the humor response (e.g., feeling connected, appreciated). However, no study thus far has identified and comprehensively assessed all emotional states relevant in the context of hospital clown interventions. Also thus far, no study has investigated the facial expressions of patients involved in a hospital clown intervention using a comprehensive, reliable and valid technique such as the FACS to validate the subjective experiences.

Thus, researchers have not yet tested whether individuals who enjoy a hospital clown intervention actually report the proposed variety of emotional states. For example, if they rate themselves highly on dimensions like feeling amused (e.g., Ruch, 1997), connected to the clown (Adams, 2002; Linge, 2012), playful or imaginative (Kontos et al., 2015), do they also show the facial expression of enjoyment? Consequently, the survey of the literature showed that an instrument suitable to measure the postulated emotions in the context of clowning is missing. It was argued that there are self-report instruments available to assess PA and NA as well as subsets of these broad dimensions related to humorous stimuli (cheerfulness, seriousness, bad mood). However, it is unlikely that those instruments capture all relevant emotional states specific to clown interventions. Both tools assessing PA/NA and humor-related states potentially miss emotional states that transcend the humor response. Hence, an instrument is missing that is sensitive to changes in emotional states induced by clowns.

Furthermore, hospital clown interventions might be accompanied by side effects: that is, they might elicit reactions in some individuals that are not intended, such as negative

emotional states. Information about negative reactions to clown visits is sparse (e.g., Kingsnorth et al., 2010), and most studies stated that hospital clown interventions have no side effects (Barkmann, Siem, Wessolowski, & Schulte-Markwort, 2013). However, people who dislike or fear clowns would probably not gain anything from a clown visit. To date, no study took into account individual differences in the susceptibility to humorous material (e.g., general liking of clowns, the level of trait cheerfulness) in the context of hospital clown interventions. Studying the influence of personality factors on the induction of amusement in patients interacting with a clown could answer the question of whether a hospital clown intervention is an appropriate method for all patients to enhance their emotional state, or whether the method is actually a contraindication for some groups of patients.

Aims of the present thesis

In the literature review it was shown that, although some empirical studies have evaluated hospital clown interventions in the past, several methodological weaknesses were identified, which threaten both internal and external validity of the studies. Furthermore, the psychological mechanisms leading to the postulated success of hospital clown interventions have not been investigated or understood entirely. For the advancement in the field, it is inevitable to go a step forward and overcome the difficulties in experimental design and measurement. Hence, the present thesis aims at contributing to the progression of research on hospital clown evaluations by identifying the positive (and negative) emotional states elicited by hospital clowns, using sound methods and assessment tools (e.g., a subjective assessment instrument specific for capturing the variety of positive emotions elicited by clowns, and validating the results with the help of a reliable objective assessment instrument), and investigating individual differences in recipients of hospital clown interventions.

To meet these goals, emotional responses of two groups of individuals are studied: observers of hospital clown interventions and patients involved in the interventions. Two

assessment methods are used in the present thesis: self-report and behavioral observation. As to date no self-report instrument is available to assess the variety of positive emotional states proposed in the literature, the first step is to develop a collection of emotional states relevant in the context of clowning. The thesis is divided into three parts, and the list of clown-specific emotional states is used in all three parts with the aim to gain a better insight into the emotional reactions of individuals exposed to hospital clown interventions. Additionally, the method of behavioral observation is used in addition in Part Three.

Part One. In the first step, a list of emotional states potentially relevant in the context of clowning will be collected with the help of two sources. The first group is made up of expert clowns who are questioned about their perception of the relevant emotions elicited in recipients of hospital clown interventions. The second consists of laypersons who watch videos of hospital clown interventions and circus clown performances and are asked to freely associate their thoughts and feelings while watching. The aims of the first part of the thesis are to test a) the resulting collection of emotional states for its degree of redundancy when compared to existing scales of emotional states, and b) the usefulness of the instrument in the evaluation of hospital clown interventions with a sample of individuals observing videos of them. To define the uniqueness of hospital clown interventions regarding their effect on the emotional states of individuals, a comparison of hospital clown interventions with two other kinds of interventions (circus clown performances and nurse interventions) will be carried out.

Part Two. In the second step, the list of clown-specific emotional states is presented to a group of hospitalized patients involved in a hospital clown intervention. The purpose of this is to investigate whether the emotional states identified by experts and laypersons actually emerge during a real clown-patient interaction. The study uses a controlled experimental design including standardization of the procedure and randomization within a natural hospital

setting, thereby increasing the internal validity of the experiment in comparison to previous studies. The aims are a) to examine the degree of similarity of emotions elicited when observing the intervention and when being involved in the intervention, and b) to gain more insight into the unique effects of hospital clown interventions on patients in comparison to another type of interventions. Therefore, the difference between two kinds of interventions often used in hospitals will be investigated using a nurse assessment and a hospital clown intervention. The emotional state of the patients will be assessed using the CLEM-29.

Part Three. In the third part of the thesis, the results from Part One and Two regarding the effects of the hospital clown intervention will be validated using a reliable technique for behavioral observation (the FACS) in addition to self-reports. Furthermore, the study investigates a so far completely disregarded issue in hospital clown interventions, the fact that not all individuals react in the same way to humorous stimuli (some are more prone to respond with amusement than others, and some even dislike engaging in humor). With the aim to investigate whether hospital clown interventions are an appropriate method to enhance the emotional state for all patients, or are contraindicated for certain groups of patients, the study will take individual differences in the level of trait cheerfulness into account. The main aims of this part are a) to examine the facial display of enjoyment (Duchenne display) elicited by hospital clowns compared to false smiles (Non-Duchenne display) in order to validate the subjective emotional experiences of patients with an objective assessment method, and b) to investigate individual differences of patients in their habitual susceptibility to smiling and laughing.

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PART ONE: AN INVESTIGATION OF THE EMOTIONS ELICITED BY HOSPITAL CLOWNS IN COMPARISON TO CIRCUS CLOWNS AND NURSING STAFF

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Introduction: Clowning – from the circus to hospital

Over the last two decades, clowns have found their way into hospitals, nursing homes and psychiatric institutions. Ruch et al. (2013) argued that these humorous interactions between clowns and patients in health care settings could be seen as positive interventions within the broader framework of positive psychology. The latter is aimed at studying what is best in people and what facilitates people to flourish. Ruch et al. suggest that many institutions (e.g., Foundation Theodora, Le Rire Medecin, Red Noses, or Soccorso Clown) are interested in strengthening the positive role hospital clowns can play in health care settings. They also identify differences between these specific clowns and others; "hospital clowns must have a comprehensive understanding of the care setting, establish a personal relationship to the patient, distract patients from their daily routines, pain and negative affect, and contribute to well-being and good atmosphere in care settings."

Although there seems to be a widely accepted understanding of the positive impact clowns can have in these types of settings, it is still an understudied topic and empirical studies are rare. Ruch et al. (2013) point out that earlier research has focused on increases in positive experiences or decreases in negative experiences in clown interactions, while other, more fine-grained processes and alterations of emotional states of patients and observers are omitted. A brief (and incomplete) review of the literature summarizes the findings: Looking at positive outcome variables, studies found positive attitudes towards and acceptance of the clowns on the part of patients and staff (e.g., Linge, 2008, 2011, 2012; Wild et al., 2007), short-term increases in self- and parent-reported psychological well-being (Pinquart et al., 2011), enhanced trait and state ratings of cheerfulness (Hirsch et al., 2010), and enhanced unspecific positive affect (as measured by a bipolar "happy vs. sad" scale; Costa Fernandes & Arriaga, 2010). Looking at the reduction of negative outcome variables in clown groups compared to control groups, studies found less self-reported worries, self-reported anxiety and

observed anxiety in children undergoing surgery (e.g., Costa Fernandes & Arriaga, 2010; Golan et al., 2009; Vagnoli et al., 2005; Vagnoli et al., 2010), reduced symptoms of depression after humour intervention in psychogeriatric patients (Hirsch et al., 2010), less self reported pain (e.g., Bertini et al., 2011), and reduced disruptive behaviour (Higueras et al., 2006). Looking at medical and physical changes, studies reported a reduction of hyperinflation in severe obstructive lung disease patients (Brutsche et al., 2008), an increased pregnancy rate in women entertained by a clown after in vitro fertilization (Friedler et al., 2011), an earlier disappearance of pathological symptoms, a higher state of relaxation, and less pain (Bertini et al., 2011), and increased pain tolerance while watching a humorous film (e.g., Stuber et al., 2009; Zweyer et al., 2004). Hence, these studies describe psychological or physical effects in patients involved in or observing clown interactions or humorous films. It is argued that clowns can elicit positive emotional states in their interaction partners, yet a detailed investigation of these states (especially at the level of single facets of affectivity) is missing.

The role of emotional states

A full theoretical account on the approaches to investigate emotional states has been given by Ruch et al. (2013). Hence, this will only be briefly described here and the reader will find a full overview in the Ruch et al. paper. General models, which differentiate between *positive* and *negative affectivity,* such as Watson and Tellegen's (1985), play a dominant role in this area. Those two dimensions are considered to exist independent from each other. Watson and Tellegen differentiate between affective states within their two broad dimensions. However, other researchers have proposed other theoretical frameworks for the assessment of such states. One of these is Janke et al.'s (2003) *Mood Rating Inventory* (BSKE [EWL]; the short version of the German *Adjective Check List*, EWL), which is sensitive to changes in momentary affective states. The usage of a broad instrument such as the BSKE (EWL) allows

testing the role of single states (24 in total) besides the two broader dimensions of *positive* (PA) and *negative affectivity* (NA). Ruch et al. (2013) also suggested accounting for individual differences in a person's propensity to experience the emotion of *exhilaration* (i.e., the process of making cheerful or the temporary rise and fall of a cheerful state; Ruch, 1993), which has been identified as the emotional response to humour. The interplay of humour as an elicitor, humour-related states and traits and the behavioural, physiological and experiential components of exhilaration have been studied extensively; for an overview see Ruch and Hofmann (2012).

Based on the description given by Ruch et al. (2013) we expect that hospital clowns induce a state of high PA (and possibly low NA) in the observers, and, when testing subsets of PA more closely, a state of high exhilaration/amusement. However, studies in the area of clown research and adjacent areas propose that hospital clowns might additionally elicit emotional states in patients that go beyond global positive affect and exhilaration.

Hospital clowns: Positive affectivity, exhilaration and beyond?

One of the main aims of this study is to find similarities and differences between hospital clowns and other professionals in their effect on individuals when observing their interaction with patients. Adams (2002) speaks of a *revolution of care* and states that the hospital clowns' work is a combination of *humour* and *love*. Hospital clowns, like other humour professionals (e.g., circus clowns), are expected to be perceived as funny, and to elicit a rise in exhilaration accompanied by smiling and laughter. This distinguishes them from health professionals, whose primary task is to care for people (which might or might not be accompanied by humour). But there might be other emotional reactions triggered by a hospital clown that exceed exhilaration. The *love strategy* (Adams, 2002) might be the overlap between a hospital clown and health professionals (e.g., nurses), as both require high levels of empathy and intuition (love) when dealing with patients. Hence, hospital clowns

seem to integrate approaches from both nurses and circus clowns: Being empathic like a caring nurse, but also eliciting humour and joy, like an entertaining circus clown. Ruch and colleagues (2013) review literature on studies that have dealt with the role of clown interventions perceived by health care professionals and patients (e.g., Kingsnorth et al., 2010; Linge, 2011). Thus far, there is no comprehensive study on the emotional states experienced by observers of such interactions. One of the obstacles in this line of research is that there is no research instrument covering a broad range of emotional states elicited by clowns working in hospitals. Ideally, such a list is compiled in close collaboration with clowns themselves for accounting for their viewpoint and practical experiences. It is argued that a better understanding of the emotional reactions elicited by clowns can help advancing the field on a theoretical level, but can also enrich the practical work of hospital clowns.

Aim of the present research

In a first attempt to understand the emotional reactions of individuals to hospital clowns, this research only concerns observers of the situation. The aim is to identify the emotional experiences induced in observers watching videos of hospital clown interventions, and to compare them to emotional experiences induced in observers while watching videos of circus clowns and nurses. These groups were selected because they overlap with the work of a hospital clown; circus clowns share some skills and the capacity to entertain and nurses share, among others, the caring elements. As no comprehensive research instrument for the assessment of clown-specific states is available, a list of emotional states is obtained with the help of interviewing expert clowns on their perception of emotions elicited during the intervention and laypersons by free associations in response to clown interventions that they see. In two studies, this list of emotional states is examined for its usefulness in the evaluation of hospital clown interventions, which will be tested according to the following three criteria.

The first criterion is that the clown-specific list represents state ratings sufficiently different from existing scales of emotional states. The second criterion is that the clown-specific list should show incremental validity when predicting the total amount of positive and negative affect in response to the films; i.e., their prediction should exceed the ones by existing mood scales. Study 1 applies the two criteria and investigates the empirical overlap between the clown-specific state ratings and those already covered by scales of a general model of PA and NA, as well as a humour-related model of emotional states. Furthermore, it is investigated whether the clown-specific state ratings perform better in the prediction of positive and negative experiences while watching a clown scene than scales of existing mood models, and thus add incremental validity to the prediction. The third criterion is that the clown-specific ratings can show the unique effect of hospital clowns on the emotional responses of observers in comparison to other groups: nurses and circus clowns, which will be investigated in Study 2.

Material Generation

In both studies, video clips of clowns and nurses are presented to participants who are asked to indicate their emotional reactions to observing the clips. For this purpose, a collection of video clips is needed which contains circus clown performances, hospital clown interactions and nursing interactions. Moreover, it is necessary to compile a list of emotional states relevant in the context of a clown performance, on which the participants rate their felt emotional states.

Cheerfulness-Empathy Video Collection (CEVC)

The *Cheerfulness-Empathy Video Collection* (CEVC; Auerbach et al., 2012b) is a collection of 15 video clips, five each preselected by the authors to be typical for the work of circus clowns, hospital clowns, and nurses in their respective settings. The clips of hospital clown interventions were filmed in hospital and nursing home settings involving children and

adults (e.g., male hospital clown playing waiter while helping at the lunch table). The five circus clowns clips show performances to audiences on stage (e.g., male clown putting table tennis balls in his mouth and making funny grimaces). The nurse clips show interactions between a nurse and one or more persons in medical situations (e.g., female nurse interacting with a child with cancer). The video clips for the two studies were generated in two stages. The first stage required three trained observers to watch several hours of archived materials and live performances of different hospital and circus clowns, as well as clips involving nurses, stemming from a variety of sources (e.g., documentary on hospital clowns in nursing homes, a video by the Austrian Red Noses Association, from the platform www.youtube.com). A pool of 90 interactions (roughly 30 of each category) was scrutinized and finally 30 clips (varying between 1:01 and 2:30 minutes in lengths) were chosen for stage two. These clips were rated on a 7-point scale ("How strong did the video clip elicit the following reactions?") on dimensions relevant for helping distinguish the types of clips (funniness, empathy, silliness, cheerfulness, joy, affection, laughter, exhilaration). In brief, the results showed that both hospital and circus clown clips elicited amusement, the hospital clown also elicited empathy, and the circus clown also elicited silliness. The nurse clips did elicit affection and empathy, but not amusement. A final selection of 15 videos consisting of five hospital clowns, five circus clowns and five nurses was chosen based on several criteria (e.g., comparability in terms of lengths, no offensive material, no disturbing or non-relevant information, etc.).

The 29 Clown Emotion List (CLEM-29)

The *29 Clown Emotion List* (CLEM-29; Auerbach et al., 2012a) consists of 29 single ratings some of which are presented as single adjectives (e.g., touched) and others as short phrases (e.g., associated with the clown). Individuals rate their current experience on 7-point Likert scale ranging from 1 (= not at all) to 7 (= very strongly). The 29 ratings were drawn

from two sources. First, three professional hospital clowns were asked to generate terms that best described their perception of the clown-audience interaction. They were instructed to draw on their experience and describe all thoughts and feelings they were told by the audience that they encountered during the clown interaction. They gave a list of 42 positive and five negative experiences. Second, a sample of 19 German-speaking adults (26.3% male, ages 24 to 66 years; $M = 39.89$, $SD = 16.57$) freely associated their thoughts and feelings to ten randomly presented videos of circus clowns and hospital clowns from the CEVC. A total of 23 positive and 28 negative responses relating to circus clowns, and a list of 34 positive and six negative responses relating to hospital clown interactions were initially compiled by these laypersons. By eliminating redundant words (synonyms), words not relating to emotional states (e.g., word describing cognitive states) and words depicting broader emotion categories (that would be covered by more unspecific mood scales) in all lists, a final set of 29 adjectives and short phrases (CLEM-29) was derived. Some of the experiences cover core elements of affective states induced by clowns (e.g., exhilarated, playful), while others refer to states that do not apply to every clown, and not in every situation (e.g., flirty, overexcited, seduced, touched). It is noteworthy that the expert clowns already mentioned all adjectives and short phrases that were finally chosen. Of those, the expert clowns stated that all but four experiences were positively connoted. It is noteworthy that they also understood the term *schadenfreude* in a positive way, meaning that the patient is able to laugh about the clumsiness of the clown. The negative ones are: fearful, threatened, creepy, and overexcited[1].

Study 1

The purpose of Study 1 is twofold. First, the relationships between the empirically derived clown-specific emotional experiences and existing models of emotional states will be

[1] The German terms were: sprachlos, gerührt, überrascht, als könnte ich loslachen, verwirrt, erheitert, über mich hinausgewachsen, privilegiert/auserwählt/besonders, erhöht, unheimlich, beschenkt, voller Phantasie, verspielt, belustigt/lustig, frech/neckisch, überdreht, furchtsam, verwundert/erstaunt, neugierig, selig, kokett, verführt, lebendig/aktiv, schadenfroh, beeindruckt, verbunden mit dem Clown/mit der Pflegeperson, bedroht, befreit, wertgeschätzt.

examined. It is hypothesized that some of the emotional states elicited by clowns can be located in a general model of mood within global PA, and more precisely within feelings related to humour and laughter (e.g., cheerfulness). In contrast, we expect that clowns elicit a variety of feelings unique to clowning, which are not strongly related to existing models of mood. Second, it will be examined whether the clown specific ratings contribute to the prediction of global positive and negative feelings while watching video clips showing clown interactions. It is hypothesized that the clown-specific ratings outperform general scales of emotional states in the prediction of the evaluation of the feelings towards the videos, and thus add incremental validity to the prediction.

Method

Participants

The sample consisted of 119 German-speaking adults (48.7% female) aged between 18 and 73 years (M = 30.66, SD = 13.53), and was a mixed sample of students and well-educated adults. Participants were recruited via personal contacts and at the university.

Instruments

The state form of the *State-Trait-Cheerfulness Inventory* (STCI-S<30>; Ruch et al., 1997) assesses humour-related states, and can be subsumed into three scales: state cheerfulness, state seriousness, and state bad mood. In the present study, a short version consisting of 18 items (STCI-S<18>) was used. People rate their current mood state on a four-point answer format from 1 (= strongly disagree) to 4 (= strongly agree). Item samples are “I feel merry” (state cheerfulness), “I am in a serious frame of mind” (state seriousness), and “I feel grouchy” (state bad mood). In the present study the scales yielded Cronbach’s alpha coefficients between .76 and .90.

The *Mood Rating Inventory* (BSKE [EWL]; Janke et al., 2003) is a multidimensional mood checklist consisting of 24 items, which can be subsumed into subscales, which then can

be subsumed into the two broad domains of PA and NA. Each item consists of a noun and two adjectives describing the mood, and participants indicate on a Likert scale ranging from 1 (= not at all) to 7 (= very strongly) to what degree the scale applies to their present state. The higher order domain of PA consists of the subscales inner relaxation, cheerfulness[2], and vigour. The higher order scale NA consists of the subscales agitation, irritation, anxiety/ sadness, and deactivation.

The *29 Clown Emotion List* (CLEM-29; Auerbach et al., 2012a) was used to assess clown-specific emotional states.

Procedure

Participants were presented two short video clips from the CEVC in random order, one circus clown (male clown putting table tennis balls in his mouth and making funny grimaces) and one hospital clown (male hospital clown gives a little miracle to an old man: He puts a flying bird on his finger) video. The two videos were chosen to represent a prototypical circus or hospital clown scene. After watching each video, participants completed the STCI-S<18>, followed by the BSKE (EWL), and then the CLEM-29. Finally, they were asked to indicate the intensity of their global positive and negative feelings while watching the clown videos on two 7-point Likert-Scales ranging from 1 (= not at all) to 7 (= very strongly). The study was conducted via an online data collection program.

Results

CLEM-29 within existing models of emotional states

Each CLEM-29 rating was correlated (Pearson's correlations) with, and predicted (multiple regression, method: stepwise) by a) the BSKE (EWL) subscales of PA (inner relaxation, cheerfulness, vigour; Table 1), the BSKE (EWL) subscales of NA (agitation,

[2] It is noteworthy that, although a scale called cheerfulness is represented in both the BSKE (EWL) and the STCI-S<18>, it does not stand for the same construct. In the BSKE (EWL), cheerfulness (German: Gutgestimmtheit) represents a broad state of elation, composed of joy, emotional well-being and cheerfulness. On the other hand, the state cheerfulness scale (German: Heiterkeit) from the STCI-S<18> is hierarchically lower and is composed of a more narrow state of hilarity and cheerfulness.

irritation, anxiety/sadness, deactivation; Table 2), and c) the STCI-S<18> scales (cheerfulness, seriousness, and bad mood; Table 3). This was done separately for both clown videos. To avoid inflation of Type I error due to multiple testing, the alpha was adjusted in all analyses according to the Bonferroni-correction, that is, for each criterion, the alpha (.05) was divided by the number of predictors. When interpreting the correlations in Tables 1 and 2, only coefficients $r \geq .23$ should be considered, as they were significant ($p < .05$) after the alpha-adjustment. In Table 3, only coefficients $r \geq .24$ should be interpreted. First, relations between the clown-specific ratings (CLEM-29) and the general model of mood (BSKE [EWL]) are presented (see Tables 1 and 2).

Table 1.

Correlations between the CLEM-29 ratings and the scales of positive affectivity of the BSKE (EWL), and results of regression analyses

	Inner relaxation[1]		Cheerfulness[2]		Vigour[3]		PA		ß (R^2)	
	CC	HC	CC	HC	CC	HC	CC	HC	CC	HC
Speechless	-.09	-.05	-.04	-.04	-.14	-.12	-.10	-.11	-	-
Touched	.13	.00	.29*	.23	.22	.31*	.25*	.28*	.29*[2] (.09)	.31*[3] (.10)
Surprised	.07	-.01	.27*	.20	.26*	.25*	.24*	.22	.53*[2]/-.34*[1] (.12)	.25*[3] (.06)
Laughter	.36*	.26*	.57*	.52*	.32*	.38*	.47*	.47*	.57*[2] (.32)	.52*[2] (.27)
Confused	-.10	-.12	-.03	-.26*	-.11	-.29*	-.08	-.30*	-	-.29*[3] (.09)
Exhilarated	.41*	.31*	.70*	.72*	.45*	.54*	.60*	.68*	.90*[2]/-.27*[1] (.52)	.73*[2] (.53)
Rise	.18	.15	.30*	.23	.27*	.23	.29*	.27*	.30*[2] (.09)	.23*[3] (.06)
Privileged	.29*	.20	.37*	.26*	.36*	.32*	.38*	.32*	.37*[2] (.14)	.32*[3] (.10)
Elevated	.30*	.23	.39*	.27*	.26*	.22	.36*	.27*	.39*[2] (.15)	.27*[2] (.08)
Creepy	.06	.08	.01	-.04	.01	.05	.03	.00	-	-
Took	.25*	.09	.34*	.29*	.29*	.27*	.33*	.27*	.34*[2] (.11)	.29*[2] (.09)
Imaginative	.26*	.21	.44*	.42*	.38*	.45*	.41*	.45*	.44*[2] (.19)	.45*[3] (.21)
Playful	.32*	.19	.53*	.43*	.34*	.39*	.46*	.42*	.53*[2] (.28)	.43*[2] (.18)
Hilarity	.41*	.24*	.63*	.63*	.40*	.43*	.55*	.57*	.63*[2] (.39)	.63*[2] (.40)
Naughty	.29*	.22	.38*	.35*	.30*	.39*	.36*	.39*	.38*[2] (.15)	.39*[3] (.15)
Overexcited	.24*	.20	.41*	.43*	.29*	.39*	.36*	.43*	.41*[2] (.17)	.43*[2] (.19)
Fearful	-.05	-.06	.11	-.04	.05	.03	.06	-.06	-	-
Puzzled	.09	.01	.16	.18	.17	.19	.16	.19	-	-
Curious	.33*	.17	.53*	.60*	.49*	.54*	.51*	.61*	.53*[2] (.28)	.60*[2] (.36)
Blessed	.35*	.28*	.55*	.52*	.31*	.39*	.46*	.50*	.55*[2] (.30)	.52*[2] (.27)
Flirty	.26*	.16	.36*	.35*	.26*	.30*	.33*	.35*	.36*[2] (.13)	.35*[2] (.13)
Seduced	.15	.18	.28*	.31*	.28*	.27*	.27*	.31*	.28*[3] (.08)	.31*[2] (.10)
Active	.53*	.36*	.66*	.66*	.71*	.77*	.72*	.75*	.49*[3]/.30*[2] (.55)	.61*[3]/.24*[2] (.62)
Schadenfreude	-.02	-.15	.06	-.11	.05	-.06	.04	-.11	-	-
Impressed	.20	.09	.36*	.35*	.42*	.44*	.38*	.40*	.42*[3] (.18)	.44*[3] (.19)
Associated	.29*	.07	.41*	.28*	.41*	.38*	.42*	.33*	.41*[3] (.17)	.38*[3] (.14)
Threatened	.13	-.14	.16	.02	.11	-.09	.15	-.04	-	-
Freed	.33*	.20	.44*	.47*	.39*	.44*	.44*	.50*	.44*[2] (.19)	.47*[2] (.22)
Appreciated	.37*	.19	.43*	.38*	.38*	.30*	.44*	.38*	.43*[2] (.18)	.38*[2] (.15)

Note. N = 113. Coefficients of regression analysis are beta-coefficients (R^2 in parentheses). Method of regression = Stepwise. In case no variable entered the regression, no coefficients are presented (-). Indices ([1] to [3]) indicate significant predictors in the regression analysis. Rise = Rise above yourself; Took = Took something away from it; Laughter = Burst into laughter; Associated = Associated with the clown; CC = Circus clown; HC = Hospital clown; PA = Positive affectivity.
*$p < .05$ (Bonferroni-corrected).

Table 2.

Correlations between the CLEM-29 ratings and the scales of negative affectivity of the BSKE (EWL), and results of regression analyses

	Agitation[1]		Irritation[2]		Anxiety/sadness[3]		Deactivation[4]		NA		ß (R^2)	
	CC	HC	CC	HC	CC	HC	CC	HC	CC	HC	CC	HC
Speechless	.24*	.23	.11	.05	.21	.07	.13	.09	.22	.14	.24*[1] (.06)	-
Touched	.30*	.22	-.13	-.15	-.04	-.07	-.15	-.25*	-.05	-.13	.35*[1]/-.23*[4] (.14)	-.30*[4]/.27*[1] (.13)
Surprised	.27*	.28*	-.10	-.04	-.06	-.08	-.16	-.23	-.05	-.06	.32*[1]/-.23*[4] (.13)	.33*[1]/-.28*[4] (.15)
											-.31*[2]/.32*[1]/-.23*[4]	-.45*[2]/.35*[1] (.20)
Laughter	.19	.17	-.31*	-.31*	-.26*	-.25*	-.27*	-.26*	-.25*	-.25*	(.22)	
Confused	.38*	.34*	.27*	.47*	.31*	.37*	.25*	.32*	.40*	.50*	.38*[1] (.14)	.47*[2] (.22)
											-.36*[2]/-.29*[4]/.26*[1]	-.47*[2]/.37*[1]/-.29*[4]
Exhilarated	.10	.14	-.40*	-.44*	-.29*	-.30*	-.36*	-.42*	-.36*	-.40*	(.27)	(.38)
Rise	.16	.23	-.08	.01	-.02	.09	-.13	-.02	-.06	.07	-	-
Privileged	.18	.38*	-.09	-.03	-.03	.06	-.21	-.15	-.09	.03	-	.38*[1] (.19)
Elevated	.23	.34*	-.16	-.11	-.09	.00	-.12	-.10	-.08	.00	-	.45*[1]/-.29*[2] (.19)
Creepy	.23	.35*	.14	.34*	.18	.32*	.05	.08	.18	.34*	-	.26*[1]. /24*[2] (.17)
Took	.16	.16	-.17	-.13	-.04	.02	-.17	-.16	-.11	-.08	-	-
Imaginative	.20	.28*	-.06	-.26*	-.02	-.04	-.30*	-.26*	-.11	-.16	-.36*[4]/.28*[1] (.16)	.46*[1]/-.44*[2] (.24)
											.44*[1]/-.25*[4]/-.24*[2]	.50*[1]/-.45*[2] (.28)
Playful	.32*	.32*	-.22	-.26*	-.14	-.12	-.24*	-.21	-.14	-.14	(.25)	
Hilarity	.06	.11	-.33*	-.42*	-.31*	-.24*	-.30*	-.33*	-.32*	-.34*	-.33*[2] (.11)	-.54*[2]/.32*[1] (.26)
Naughty	.21	.35*	-.17	-.13	-.15	-.04	-.20	-.22	-.13	-.07	-	.47*[1]/-.32*[2] (.21)
Overexcited	.36*	.48*	-.08	-.06	.03	.00	-.17	-.17	-.01	.03	.42*[1]/-.27*[4] (.20)	.59*[1]/-.30*[2] (.30)
Fearful	.29*	.47*	.06	.30*	.21	.42*	.01	.05	.16	.36*	.29*[1] (.09)	.36*[1]/.28*[3] (.29)
Puzzled	.14	.18	-.06	-.14	-.06	-.16	-.10	-.16	-.05	-.11	-	-
											-.26*[4]/.31*[1]/-.24*[2]	-.32*[4] (.10)
Curious	.19	.13	-.26*	-.31*	-.22	-.25*	-.28*	-.31*	-.23	-.28*	(.20)	
Blessed	.14	.23	-.29*	-.31*	-.17	-.15	-.14	-.17	-.18	-.17	-.29*[2] (.08)	-.47*[2]/.42*[1] (.24)
Flirty	.25*	.29*	-.12	-.15	-.06	-.03	-.04	-.01	-.01	.01	.25*[1] (.06)	.42*[1]/-.31*[2] (.17)
Seduced	.15	.36*	-.08	-.05	-.04	-.08	-.13	-.01	-.06	.06	-	.46*[1]/-.26*[3] (.18)
Active											-.59*[4] (.35)	-.54*[4]/.35*[1]/-.25*[2]
	-.04	.17	-.36*	-.34*	-.37*	-.31*	-.59*	-.59*	-.51*	-.42*		(.46)
Schadenfreude	.18	.24*	.17	.22	.13	.11	-.03	.08	.13	.21	-	.24*[1] (.06)

Impressed	.13	.19	-.15	-.13	-.04	-.08	-.27*	-.24*	-.16	-.13	-.27*[4] (.07)	-.28*[4]/.23*[1] (.11)
Associated	.09	.31*	-.24*	-.17	-.17	.05	-.35*	-.19	-.27*	-.06	-.35*[4] (.12)	.44*[1]/-.34*[2] (.19)
Threatened	.02	.08	.02	.03	.00	.22	-.01	.02	.01	.09	-	-
Freed	.09	.24*	-.26*	-.17	-.17	-.10	-.20	-.18	-.21	-.11	-.26*[2] (.07)	.37*[1]/-.31*[2] (.14)
Appreciated	.12	.27*	-.13	-.20	-.07	-.09	-.15	-.14	-.10	-.09	-	.41*[1]/-.36*[2] (.18)

Note. N = 113. Coefficients of regression analysis are beta-coefficients (R^2 in parentheses). Method of regression = Stepwise. In case no variable entered the regression, no coefficients are presented (-). Indices ([1] to [4]) indicate significant predictors in the regression analysis. Rise = Rise above yourself; Took = Took something away from it; Laughter = Burst into laughter; Associated = Associated with the clown; CC = Circus clown; HC = Hospital clown; NA = Negative affectivity.

*$p < .05$ (Bonferroni-corrected).

Table 1 shows that, in line with the hypothesis, PA correlated with several CLEM-29 ratings, with the highest correlations ($r > .50$) occurring between the PA-subscale cheerfulness and exhilarated, active, hilarity, burst into laughter, curious, and blessed. Numerically lower, but still significant correlations were obtained between PA and touched, surprised, rise above yourself (only circus clown), elevated, privileged, took something away from it, imaginative, naughty, overexcited, flirty, seduced, impressed, associated with the clown, freed, and appreciated (both clowns). Looking at the predictive validity of the subscales of PA for the CLEM-29 ratings, one can see that mostly the scale cheerfulness predicted ratings from the CLEM-29. This subscale explained a high percentage of variance in those CLEM-29 ratings relating to amusement (e.g., 53% explained variance at the rating exhilarated and 40% explained variance at the rating hilarity for the hospital clown), suggesting that they conceptually overlapped. For most of the other ratings (especially the ones not referring to a cheerful state), the proportion of explained variance was rather low (< 20%). As expected, a great proportion of the variance of the CLEM-29 ratings was not explained by the scales of PA, and some of the CLEM-29 ratings (especially those related to NA) were not related to the model of PA at all; i.e., no predictor entered the regression analysis. These ratings were speechless, confused, creepy, fearful, puzzled, *schadenfreude*, and threatened.

As regards the domain of NA (Table 2), correlations were lower, but mostly in a plausible direction: negatively connoted ratings from the CLEM-29 (confused, creepy, fearful, *schadenfreude*) correlated positively with higher order NA, and positively connoted ratings from the CLEM-29 correlated negatively with NA. It was striking that for the subscales of NA for both types of clowns, many CLEM-29 ratings (e.g., surprised, overexcited, flirty, playful) were positively correlated with the subscale agitation, which

subsumes a state of psychological and physiological arousal. Again, many CLEM-29 ratings were not represented in the general model of NA.

Next, the relations between the clown-specific ratings and the model of humour-related states were examined. Therefore, each CLEM-29 rating was correlated (Pearson's correlations) with, and predicted (multiple regression, method: stepwise) by the STCI-S<18> scales cheerfulness, seriousness, and bad mood, separately for both clown videos. Results can be seen in Table 3.

Table 3.

Correlations between the CLEM-29 ratings and the STCI-S<18> scales, and results of multiple regression analyses

	Cheerfulness[1]		Seriousness[2]		Bad mood[3]		ß (R^2)	
	CC	HC	CC	HC	CC	HC	CC	HC
Speechless	.06	.00	.21	.15	.13	.01	-	-
Touched	.45*	.28*	-.08	.14	-.18	-.13	.45*[1] (.20)	.35*[1]/.24*[2] (.13)
Surprised	.34*	.17	.02	.15	-.13	-.12	.34*[1] (.12)	-
Laughter	.68*	.58*	-.22	-.10	-.32*	-.36*	.68*[1] (.46)	.58*[1] (.33)
Confused	-.02	-.27*	.21	.20	.25*	.41*	.25*[3] (.06)	.41*[3] (.17)
Exhilarated	.81*	.69*	-.36*	-.20	-.48*	-.52*	.81*[1] (.66)	.69*[1] (.48)
Rise	.36*	.14	-.05	.09	-.14	-.05	.36*[1] (.13)	-
Privileged	.39*	.22	.05	.25*	-.17	-.02	.39*[1](.15)	.34*[2]/.31*[1] (.15)
Elevated	.43*	.26*	-.04	.13	-.22	-.10	.43*[1] (.19)	.26*[1] (.07)
Creepy	.04	-.07	.13	.09	.14	.24*	-	.24*[3] (.06)
Took	.37*	.20	.07	.04	-.18	-.13	.45*[1]/.23*[2] (.18)	-
Imaginative	.41*	.44*	-.05	.11	-.12	-.24*	.41*[1] (.17)	.51*[1]/.25*[2] (.25)
Playful	.57*	.48*	-.05	.08	-.27*	-.31*	.57*[1] (.32)	.55*[1]/.24*[2] (.28)
Hilarity	.66*	.61*	-.25*	-.06	-.38*	-.48*	.66*[1] (.44)	.61*[1] (.37)
Naughty	.40*	.37*	-.04	.01	-.23*	-.19	.40*[1] (.16)	.37*[1] (.13)
Overexcited	.42*	.49*	-.05	.04	-.11	-.17	.42*[1] (.17)	.49*[1] (.24)
Fearful	.07	.00	.01	.22	.02	.23*	-	-
Puzzled	.12	.19	.10	.16	-.09	-.21	-	-
Curious	.41*	.53*	-.01	-.02	-.33*	-.44*	.41*[1] (.17)	.53*[1] (.28)
Blessed	.55*	.52*	-.18	-.01	-.30*	-.32*	.55*[1] (.30)	.52*[1] (.27)
Flirty	.39*	.40*	-.04	.08	-.14	-.20	.39*[1] (.15)	.40*[1] (.16)
Seduced	.41*	.29*	-.06	.12	-.14	-.14	.41*[1] (.17)	.29*[1] (.09)
Active	.46*	.52*	-.11	-.08	-.48*	-.48*	-.31*[3]/.28*[1] (.28)	.36*[1]/-.27*[3] (.32)
Schadenfreude	.02	.02	.01	-.01	.10	.17	-	-
Impressed	.47*	.33*	-.01	.05	-.19	-.21	.47*[1] (.23)	.33*[1] (.11)
Associated	.53*	.34*	-.22	.21	-.34*	-.10	.53*[1] (.28)	.44*[1]/.33*[2] (.22)
Threatened	-.04	-.12	.09	.19	-.01	.13	-	-
Freed	.41*	.34*	-.05	-.02	-.29*	-.24*	.41*[1] (.17)	.34*[1] (.11)
Appreciated	.37*	.26*	.05	.21	-.24*	-.25*	.37*[1] (.14)	.35*[1]/.31*[2] (.16)

Note. N = 113. Coefficients of regression analysis are beta-coefficients (R^2 in parentheses). Method of regression = Stepwise. In case no variable entered the regression, no coefficients are presented (-). Indices ([1] to [3]) indicate significant predictors in the regression analysis. Rise = Rise above yourself; Took = Took something away from it; Laughter = Burst into laughter; Associated = Associated with the clown; CC = Circus clown; HC = Hospital clown.
*$p < .05$ (Bonferroni-corrected).

Table 3 shows that feeling exhilarated, hilarity, playful, and burst into laughter were highly correlated with state cheerfulness (STCI-S<18>). Perhaps due to the semantic overlap, these ratings exhibited high correlations, which were higher for circus clowns than for hospital clowns. To a lower extent, we also found positive relationships between state cheerfulness and most of the other positively connoted CLEM-29 ratings (i.e., those with a smaller overlap). Most ratings of the CLEM-29 were uncorrelated with state seriousness, however, for the hospital clown, feeling privileged was positively correlated with state seriousness. State bad mood was negatively correlated with some ratings from the CLEM-29 (e.g., exhilarated, active), and positively correlated with feeling confused, creepy, and fearful. Results of the regression analyses indicated four different types of relationships between the CLEM-29 ratings and the STCI-S scales: A majority of CLEM-29 ratings, especially the ratings referring to a humorous state, was solely predicted by (positive) state cheerfulness. Certain ratings were represented in the humour-related mood model as a combination of (positive) state cheerfulness and (positive) state seriousness (e.g., touched, privileged, took something away from it, imaginative, appreciated, associated with the clown, playful). These seem to be the states requiring a cheerful mood and a more serious frame of mind (i.e., a contemplative rather than silly cheerful state). A group of ratings was predicted by state bad mood only (e.g., confused, creepy), and active is predicted by (low) bad mood and high state cheerfulness. While state cheerfulness, state seriousness, and state bad mood seem to mediate the effects of the clowns on the various facets of positive and negative experiences, the inspection of explained variance suggests that for most of the ratings, the variance in the CLEM-29 ratings cannot fully be explained through these three states.

In sum, the inspection of the relationships of the clown-specific CLEM-29 ratings with two models of emotional states showed that some aspects of experience induced by clowns are already incorporated well in existing models of emotional states. This is especially true for

experiences that describe a positive state characterized by cheerfulness and hilarity. While these are well represented in two models, several other clown-specific experiences and judgments are not sufficiently covered.

Prediction of the global feelings towards the videos

Next, the prediction of the global positive and negative feelings experienced by participants while watching the videos was examined. More precisely, it was tested whether some of the clown specific ratings meaningfully contributed to the prediction after controlling for age, gender and the general mood scales. Therefore, hierarchical multiple regression analyses with age, gender (block 1, method: enter), the BSKE (EWL)-scales (block 2, stepwise), the STCI-S<18> scales (block 3, stepwise), and the CLEM-29 ratings as predictors (block 4, stepwise), and the positive and negative global experiences towards the videos as criteria (separately for both types of clowns) were conducted. Results are displayed in Table 4. All regressions consisted of more than one step, but only results of the final step are given.

Table 4.

Final steps of hierarchical multiple regression analyses predicting global positive and negative experiences towards the clown videos

Positive Experiences	β	R	Negative Experiences	β	R
Circus Clown			Circus Clown		
Age	-.11		Age	.23**	
Gender	.17*		Gender	-.11	
Cheerfulness[1]	-.12		Irritation[1]	.11	
State cheerfulness[2]	.40**		State cheerfulness[2]	-.27*	
Associated with the clown[3]	.32**	.63	Confused[3]	.23*	
			Active[3]	.30**	
			Associated with the clown[3]	-.29**	.60
Hospital Clown			Hospital Clown		
Age	-.10		Age	.04	
Gender	-.11		Gender	.16*	
Vigour[1]	.23*		Irritation[1]	.36***	
Anxiety/sadness[1]	.23**		Associated with the clown[3]	-.40***	
Associated with the clown[3]	.57***		Appreciated[3]	.38***	.58
Privileged[3]	-.27**				
Touched[3]	.19*				
Imaginative[3]	-.24*				
Seduced[3]	.18*	.69			

Note. N = 113. Age and gender were entered using forced entry; all other predictors were entered stepwise. Indices indicate the nature of the predictors: [1]BSKE (EWL) = Mood Rating Inventory, [2]STCI-S<18> = State-Trait Cheerfulness Inventory, [3]CLEM-29 = 29 Clown Emotion List. Only the final step of the regression is presented. β = Standardized coefficient beta; R = Multiple correlation coefficient.
*p < .05. **p < .01. ***p < .001.

The regression analyses (Table 4) revealed that some of the clown-specific ratings (CLEM-29) showed incremental validity in the prediction of the intensity of global positive and negative feelings towards the videos over and above the global and the humour-related state scales. The prediction of positive experiences towards the circus clown video emerged in four steps (R^2 = .40 in the final step). Male gender, a cheerful state, and the feeling of a close association to the clown predicted the intensity of positive feelings towards the circus clown video. The CLEM-29 rating feeling associated with the clown contributed an additional 8% of explained variance to the prediction of the positive experiences towards the circus clown

video. As regards the prediction of the intensity of negative experiences towards the circus clown, again (low) cheerfulness and the feeling of connectedness to the clown played a role, combined with higher age, and the feeling of confusion and activeness (six steps; R^2 = .36 in the final step) Here, the incremental contribution of the CLEM-29 rating feeling associated with the clown to the prediction of the negative global experience was 6%.

The prediction of the positive experiences towards the hospital clown video emerged in eight steps. Feeling vigorous, anxious/sad, associated with the clown, privileged, touched, imaginative, and seduced predicted the positive experiences towards the video clip (R^2 = .47 in the final step). Variables related to amusement did not enter the prediction, but this does not necessarily mean that they do not play a role. The zero-order correlations between the positive experiences towards the video and variables representing a state of amusement (e.g., state cheerfulness) were all positive (all r between .22 and .30, all $p < .05$). However, the relations to the clown-specific ratings exceeding amusement were numerically higher (e.g., touched: $r = .41$, $p < .01$). Those ratings (associated with the clown, privileged, touched, imaginative, seduced) contributed an incremental 32% of explained variance to the prediction of the positive experiences towards the hospital clown video. Interestingly, those ratings were represented in the humour-related mood model of emotional states as a combination of state cheerfulness and seriousness (see Table 3). This indicates that the positive experiences towards the hospital clown video might best be predicted by a more profound cheerful mood combined with a serious state of mind. A separate regression analysis predicting the positive experiences towards the clown videos only with the scales of the STCI-S<18> as predictors (method: stepwise) supported this notion. The liking of the hospital clown video was predicted by state cheerfulness ($\beta = .28$, $p < .01$) and state seriousness ($\beta = .20$, $p < .05$; R^2 = .09). On the other hand, the circus clown video was predicted by cheerfulness only ($\beta = .50$, $p < .001$, R^2 = .25). As regards the negative experiences towards the hospital clown

video, male gender, irritation, low association with the clown, and appreciation predicted the intensity of negative feelings towards the hospital clown video (four steps, $R^2 = .34$ in the final step). Those ratings (feeling associated with the clown, feeling appreciated) contributed an additional 20% of explained variance to the prediction of the negative experiences towards the hospital clown video.

In sum, results of the regression analyses revealed that the global experiences towards the circus clown video was predicted by a cheerful state combined with a close connection to the clown. The hospital clown video was predicted mainly by clown-specific emotion ratings relating to feelings that can be expressed as a profound and contemplative cheerful state and closeness to the clown.

Discussion

Study 1 tested to what extent the clown-specific adjectives and short phrases relate to already existing instruments for the assessment of emotional states (i.e., criterion one), and to what extent they predict a global evaluation of the positive and negative feelings towards the clowns (i.e., criterion two). As expected, we found some empirical overlap between general models of mood, meaning that certain CLEM-29 ratings correlated positively with a state of relaxed elation, cheerfulness and vigour, and negatively with deactivation and bad mood. This fits well into the study of humorous stimuli and resulting exhilaration (Ruch, 1993), suggesting that watching clowns either performing on stage or interacting with people in need of care induces a state of pleasurable, relaxed excitation.

However, also in line with our expectations, it was mostly the cheerfulness and hilarity elements of the clown-specific list that showed some degree of redundancy with existing scales of emotional states, but other emotional qualities like feeling connected to the clown, feeling touched or elevated did not relate strongly to general models of emotional states (and thus represent a unique quality). It should be highlighted that for the hospital clown, feeling

touched, imaginative, playful, associated with the clown, and appreciated were predicted by both cheerfulness and seriousness. It seems that a cheerful mood and a serious frame of mind together produce states that seem to be a more profound form of cheerfulness, rather than superficial and shallow. Furthermore, those ratings were good predictors for the intensity of global positive feelings towards the hospital clown video. In particular, the more people felt associated with the clown, the higher was their intensity of positive feelings towards the video clip, and the less associated they felt with the clown, the higher was their intensity of negative feelings towards the video clip.

It should be noted that the results of the regression analyses are more of an exploratory nature, and although some of the clown-specific ratings played a role in predicting the global experiences towards the videos, those not entering the regression should not be discarded from the list for several reasons: The criterion consisted of a single rating of limited reliability rather than a scale. Also, an examination of the descriptive statistics of the positive experiences towards the hospital clown video (M = 4.99, SD = 1.47; scale from 1 to 7) revealed that it was negatively skewed. Furthermore, due to the high number of predictors and the relatively small sample size one should be cautious about an over-interpretation of the results of the regression.

Nevertheless, Study 1 indicates that there is more to seeing clowns than covered by a general model of positive affectivity (including elation, vigour), and by a humour-related model of mood (cheerfulness, seriousness, and bad mood). This study gives a first impression on the importance of the clown-specific emotional states compared to general mood states when watching videos of clowning. All in all, it seems that certain ratings of the CLEM-29 are useful in predicting the appreciation of a hospital clown scene over and above the general and humour-related states.

However, this study included only one hospital clown scene among a range of possible interventions. Although all belong to the same group of professionals, it is likely that they differ in style, performance, and clown persona. These differences might lead to different emotions elicited in observers and patients. For example, a more calm and serious clown who triggers feelings that exceed amusement (e.g., feeling appreciated), might not fit to every individual, as some individuals prefer more outward directed hilarity and fun. In the next study, it is aimed to include a greater variety of videos of clown-interactions, and to present these to a larger sample. It is suggested that some of the clown-specific ratings will be elicited in any hospital clown intervention, as they are of a more general type (e.g., exhilaration, surprise, hilarity). Furthermore, the expert clowns indicated that these emotional states have been elicited in a great variety of situations they have been part of. Other ratings are more specific to certain clowns or certain situations, and thusly might not be elicited by all clowns (e.g., flirtatiousness, touch).

Furthermore, this study did not examine the unique contribution of these ratings in the evaluation of hospital clown interventions compared to other possible interventions. It was suggested that hospital clowns add a unique component to the hospital routine, which lies in the combination of attributes of amusing circus clowns and empathic nurses. So in Study 2, we investigate the emotional experiences elicited by watching videos of hospital clowns in comparison to videos of two other groups of professionals: nurses and circus clowns.

Study 2

The third criterion for the usefulness of a rating stated that if one can expect a difference between the groups of professionals (e.g., a hospital clown is more exhilarating than a nurse), the results actually should demonstrate this expected difference for this item (i.e., the rating should be higher for the hospital clown than for the nurse). Study 2 further investigates the usefulness of the clown-specific ratings (CLEM-29) in the evaluation of

hospital clown interventions applying criterion three and also including all videos from the CEVC. It will therefore be examined whether watching hospital clowns, circus clowns and empathic nurses results in different emotional responses in observers. It is hypothesized that both kinds of clowns elicit feelings of amusement. Furthermore, hospital clowns are expected to elicit feelings exceeding amusement. The nurse is expected to share the empathic, but not the amusing component with the hospital clown. It is expected that the nurse and the circus clown share the least qualities, and hence, will elicit very different emotional responses in observers.

In Study 2, it will also be of interest to see how unique vs. redundant a particular rating of the CLEM-29 is, that is, how strongly it correlates with other ratings. Such clusters of correlating ratings can be identified by factor analysis. This can help to either combine some ratings to a scale or dimension, or to avoid redundancies by searching for ratings with low intercorrelations. It should be highlighted that the unique ratings are still of interest and importance, especially if they are sensitive to differences among the three groups.

Method

Participants

The sample consisted of 183 German-speaking adults (26.8% male) in the ages from 18 years to 63 years (M = 28.50; SD = 9.31), and was a mixed sample of students and well-educated adults. Participants were recruited in a multitude of ways, for example via mailing lists, flyers or in undergraduate psychology seminars. Initially 226 adults participated in the study, but an inspection of the response pattern for each participant over all clown ratings (M = 2.50, SD = 0.80) led to the exclusion of 43 participants, whose means were below one standard deviation of the overall mean (i.e., below M = 1.70).

Instruments

The *29 Clown Emotion List* (CLEM-29; Auerbach et al., 2012a) was used to assess clown-specific emotional states.

The *Cheerfulness-Empathy Video Collection* (CEVC, Auerbach et al., 2012b) was used in Study 2 including all 15 video clips. To test the internal consistency of each set of five videos, we calculated reliability coefficients (Cronbach's alpha). This was done for all CLEM-29 ratings. For the circus clown videos, the median alpha of 29 ratings was .78. For the nurse videos, the median alpha was .74. And for the hospital clown, the median alpha was .80.

Procedure

Participants were presented the 15 video clips from the CEVC in random order. They were instructed to watch each clip, and to rate their emotional state on the 29 ratings of the CLEM-29 after each clip. The study was conducted via an online data collection program (www.unipark.de). The participation was voluntary, and psychology students participated in exchange for course credit.

Results

Dimensionality of the CLEM-29

About nine percent of the ratings correlated highly (70 out of 812 possible intercorrelations over all clowns were above .70) and this raised the question of redundancy of the ratings. Therefore the emotional responses elicited by the ten clown videos were factor analysed. To arrive at one score for each participant for each of the CLEM-29 ratings, the mean of each rating was computed by averaging across the five clips for circus and hospital clown videos separately. As the factors should be valid for both types of clowns, the two matrices were merged into one by using two lines for each participant, one for the 29 ratings for circus clowns and the others formed by the 29 hospital clown ratings. The intercorrelations among the 29 ratings across the $N = 366$ data points were subjected to a

principal components analysis. Four eigenvalues exceeded unity, and also the scree test and parallel analysis by Horn suggested the retention of four factors (the first six eigenvalues were 12.70, 4.07, 2.51. 1.68, 0.92, and 0.72). Four factors explaining 72.33% of the variance were extracted and rotated to the Oblimin criterion. The oblique factor solution is given in Table 5.

Table 5.

Factor pattern matrix for oblimin four factor solution for the CLEM-29 ratings

	F1	F2	F3	F4	h^2
Speechless	.18	.38	**.58**	.16	.60
Touched	.46	-.09	**.65**	.05	.76
Surprised	-.01	.29	.22	**.74**	.74
Laughter	-.21	-.09	-.04	**.93**	.70
Confused	-.09	**.74**	-.13	.15	.62
Exhilarated	.14	-.18	.04	**.82**	.77
Rise	**.86**	.08	.09	-.02	.77
Privileged	**.86**	.03	.21	-.10	.77
Elevated	**.82**	-.02	.00	-.02	.65
Creepy	.03	**.86**	-.10	-.20	.73
Took	**.73**	-.04	.25	.11	.75
Imaginative	.45	.05	-.15	**.51**	.72
Playful	.44	-.04	-.25	**.55**	.76
Hilarity	.09	-.11	-.06	**.88**	.83
Naughty	.35	.18	-.42	**.46**	.74
Overexcited	.17	.31	**-.52**	.44	.76
Fearful	-.06	**.86**	.17	-.08	.71
Puzzled	.17	.43	.22	**.51**	.71
Curious	.45	.09	.14	**.46**	.69
Blessed	**.80**	-.09	.18	.02	.71
Flirty	**.81**	.09	-.39	.04	.77
Seduced	**.82**	.03	-.26	-.02	.66
Active	**.81**	.05	-.10	.02	.68
Schadenfreude	.08	.43	**-.49**	.23	.58
Impressed	.34	.04	**.47**	**.47**	.78
Associated	**.57**	-.07	.46	.17	.74
Threatened	-.01	**.89**	.04	-.09	.76
Freed	**.81**	-.07	-.03	.14	.77
Appreciated	**.83**	-.07	.19	.00	.76

Note. N = 366. Extraction: Principal component analysis. Rotation: Oblimin. Boldface indicates highest factor loadings in a row. Rise = Rise above yourself; Took = Took something away from it; Laughter = Burst into laughter; Associated = Associated with the clown. F1 = Transcendence; F2 = Uneasiness; F3 = Arousal; F4 = Amusement; h^2 = communality.

Table 5 shows two major and two minor factors in terms of explained variance. The factors are placed in a two-dimensional space of valence (positive, negative) and arousal (low,

high), and all four factors are represented (total variance explained: 72.33%). A potent first factor (explaining 43.80% of the variance) was loaded by the eleven ratings, all of which have a positive valence (in descending order): privileged, rise above yourself, appreciated, elevated, seduced, active, freed, flirty, blessed, took something away from it, and associated with the clown. These ratings describe the recipients being uplifted and surpassing the ordinary, and hence the factor was tentatively labelled *transcendence*, according to its non-religious connotation (Merriam-Webster's Online Dictionary, 2012). The second factor was loaded by four ratings (in descending order): threatened, fearful, creepy, and confused. It refers to the level of negative feelings induced by clowns, and is therefore called *uneasiness*. The third factor was bipolar and was loaded by the four ratings (in descending order): touched, speechless (both positively), overexcited, and *schadenfreude* (both negatively). All ratings of this factor relate to different states of arousal, in which positive loadings (touched and speechless) refer to a calm state, that is, low arousal, whereas negative loadings (overexcited and *schadenfreude*) refer to a more heightened arousal. The factor was labelled *low vs. high arousal* (short: *arousal*). All ratings on arousal showed substantial second loadings (above .30) on the valence dimensions. The rating overexcited had positive secondary loadings on amusement and uneasiness. The ratings of *schadenfreude* and speechless had positive second loadings on uneasiness. Feeling touched loaded positively on transcendence.

Factor four was also a potent factor and was loaded by nine ratings (in descending order): burst into laughter, hilarity, exhilarated, surprised, playful, imaginative, puzzled, curious, and naughty. Factor four merged a variety of amusement-related states (including more calm cheerfulness and aroused hilarity) and was tentatively labelled *amusement*. The rating impressed loaded equally high and positively on amusement and arousal. As impressed is primarily neutral, and can be used in a positive or negative context, it was assigned to the

arousal factor. Moreover, the amusement-ratings imaginative, playful, naughty, curious, and additionally impressed showed positive second loadings above .30 on transcendence. Feeling puzzled showed a positive second loading on uneasiness. Flirty, naughty and *schadenfreude* both loaded negatively on arousal, and associated with the clowns loaded positively on arousal.

In sum, the results of the principal component analysis suggested the need of at least four factors to understand the structure of the CLEM-29 ratings. All factors except transcendence and amusement (r = .52) correlated only slightly (between r = -.04 and .20). Communalities indicated the explanation of more than 50% of the variance for each rating. Other solutions including more than four factors might be considered to account for all reliable variance. An alternative view is that there are the two major core aspects of clown interactions, namely amusement (as felt for both observer and actor, and both hospital clown and circus clown) and transcendence (probably more prevalent in the observer, and more typical for hospital clowns), and then some more unique and narrow stylistic aspects of clown behaviour and interaction.

Differences between circus clowns, nurses and hospital clowns

To examine the differences in elicited emotions between different groups of professionals (i.e., criterion three), ratings for the videos depicting hospital clowns, circus clowns and nurses were analysed. Repeated measures ANOVAs with video clip (circus clown, nurse, hospital clown) as repeated measurement factor were computed for the four factors (based on the factor scores that were estimated using the regression method) and for all 29 individual ratings. Again, each CLEM-29 rating was aggregated across the five clips for circus clown, nurse, and hospital clown videos. Post-hoc tests (Bonferroni corrected) were applied to test between which of the groups a difference occurred. The results are displayed in Table 6. For conceptual reasons, results of each factor are presented first (depicting the

general pattern), followed by the results of each rating belonging to the respective factor. The latter will only be discussed in more detail when deviating from the general pattern.

Table 6.

Descriptive statistics and results of ANOVAs with aggregated video clips for circus clown, nurse, hospital Clown (CLEM-29 ratings and 4 factors)

	Circus clown		Nurse		Hospital clown			
Factor/Rating	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F* (2, 364)	partial η^2
Transcendence	-0.46c	0.73	-0.33b	0.61	0.46a	1.02	181.92*	.50
Associated	2.10c	1.00	3.16b	1.24	4.09a	1.37	225.77*	.55
Appreciated	1.95c	1.04	3.06b	1.44	3.86a	1.57	226.15*	.55
Blessed	1.57c	0.77	1.85b	0.97	2.77a	1.36	135.08*	.43
Privileged	1.63c	0.88	2.54b	1.27	2.98a	1.49	116.73*	.39
Took	1.98c	1.00	2.37b	1.09	3.35a	1.41	115.39*	.39
Freed	1.89b	0.97	1.62c	0.79	2.71a	1.36	99.26*	.35
Elevated	1.78b	0.99	1.67b	0.86	2.61a	1.43	89.36*	.32
Rise	1.67b	0.89	1.82b	0.88	2.53a	1.26	82.00*	.31
Seduced	1.53b	0.83	1.17c	0.41	1.99a	1.22	81.88*	.31
Flirty	1.70b	0.93	1.23c	0.44	1.97a	1.09	79.76*	.31
Active	1.98b	1.05	1.98b	0.96	2.74a	1.35	56.61*	.24
Uneasiness	0.20a	1.13	0.42a	1.22	-0.20b	0.80	31.48*	.15
Confused	2.27a	1.10	1.73b	0.76	1.67b	0.76	45.51*	.20
Fearful	1.34b	0.60	1.82a	0.91	1.33b	0.55	43.64*	.19
Threatened	1.38b	0.62	1.68a	0.88	1.23c	0.42	33.52*	.16
Creepy	1.65a	0.78	1.67a	0.85	1.34b	0.56	19.24*	.10
Arousal	-0.66c	0.73	0.89a	0.72	0.66b	0.77	363.55*	.67
Touched	1.27c	0.51	2.59b	1.07	3.45a	1.23	360.99*	.67
Overexcited	2.86a	1.49	1.25c	0.42	1.97b	0.91	179.83*	.50
Impressed	2.54c	1.14	3.05b	1.26	3.77a	1.31	90.72*	.33
Schadenfreude	1.62a	0.86	1.05c	0.16	1.13b	0.31	84.61*	.32
Speechless	2.07c	1.03	2.47b	1.02	2.87a	1.10	55.66*	.23
Amusement	0.00a	1.11	-1.54b	0.56	0.00a	0.88	337.50*	.65
Hilarity	3.35a	1.20	1.53b	0.62	3.44a	1.09	346.22*	.66
Exhilarated	3.48b	1.21	1.85c	0.75	3.89a	1.04	314.43*	.63
Playful	3.28b	1.36	1.54c	0.66	3.51a	1.37	304.37*	.63
Laughter	2.97a	1.21	1.26c	0.42	2.66b	1.03	245.76*	.58
Imaginative	3.01b	1.31	1.50c	0.66	3.22a	1.37	254.53*	.58
Naughty	2.77a	1.29	1.32c	0.51	2.55b	1.11	199.21*	.52
Surprised	3.10a	1.16	2.21b	0.95	3.15a	1.16	82.90*	.31
Curious	2.57b	1.17	2.44b	1.14	3.27a	1.28	62.79*	.26
Puzzled	2.55b	1.12	2.26c	1.04	2.79a	1.12	25.32*	.12

Note. N = 183. Ratings are sorted according to highest effect size within one factor. Factor scores are estimated using the regression method. Rise = Rise above yourself; Took = Took something away from it; Laughter = Burst into laughter; Associated = Associated with the clown. M = mean, SD = standard deviation. Partial η^2 = effect size.
*p < .001.
a > b > c indicate significant results of pairwise comparisons (Bonferroni-corrected)

Table 6 shows that all the main effects for the broader factors and the single ratings were significant. The effect sizes (partial η^2) ranged from .10 to .67 indicating large effects (Tabachnick & Fidell, 2013). Regarding the factor of *transcendence*, the post hoc test showed that the hospital clowns led to highest feelings of transcendence, followed by the nurses which, in turn, were higher than the circus clowns. At the rating level the emotional responses to the three types of videos showed that five of the ratings loaded on the transcendence factor followed the same pattern as the factor: Compared to the nurse, the hospital clown made people feel more privileged, appreciated, and blessed, and they feel they took something away from it, and feel associated with the clown. They also reported to feel more touched, speechless [both factor arousal], and impressed [factor arousal]). All other ratings loading on transcendence, that is, active, rise above yourself, and elevated (as well as curious stemming from the factor amusement) followed a similar pattern: The hospital clown (alone or shared with others) elicited more intense emotional responses compared to both the nurse and circus clown videos, while the latter two did not differ. Furthermore, the hospital clown made people feel more seduced, freed, and flirty than the circus clown. In these ratings, the circus clown elicited higher responses than the nurse.

Regarding the factor of *amusement*, the post hoc test showed that videos of both hospital clown and circus clown elicited the same level of amusement. Both led to higher feelings of amusement than the nurse videos. Looking at differences in more detail, the ratings for hilarity and surprised loaded on amusement and were in line with the pattern of the factor. The hospital clown exceeded the circus clown in the ratings exhilarated, playful, imaginative and puzzled. Again, the video of the nurse elicited lowest ratings. On the other hand, the circus clown yielded higher ratings for naughty and burst into laughter than the hospital clown, which, in turn, did more so than the nurse. Finally, the hospital clown elicited

higher ratings for curiosity than the nurse and the circus clown, which did not differ in the responses elicited.

Next, the factor of *arousal* was investigated. On the positive pole, indicating low arousal, the pattern was equal to the transcendence factor: the hospital clown elicited the highest feelings of touched, speechless, and impressed, followed by the nurse, and last by the circus clown. On the negative pole, indicating a state of high arousal, the circus clown led to the highest feelings of overexcitement and *schadenfreude*, followed by the hospital clown and last by the nurse. This pattern was equal to the pattern of the amusement-ratings burst into laughter and naughty.

Although means for negatively connoted ratings (e.g., fearful, creepy) were rated generally low (see Table 6), differences between the groups were identified. The factor of *uneasiness* presented a distinct pattern: Both nurse videos and circus clown videos elicited higher levels of uneasiness than the hospital clown. At the level of single ratings, both the videos of nurses and circus clowns elicited higher feelings of creepy than the hospital clown. The nurse videos elicited the highest feelings of uneasiness in three ratings. Participants reported higher levels of felt threat in the nurse video, compared to the circus clown video, and lowest feelings of threat in the hospital clown video. The nurse video elicited higher levels of fear than videos of both circus and hospital clown. The hospital and circus clown did not differ in eliciting fear. Finally, the circus clown made people feel more confused than both nurses and circus clowns, which did not differ.

In sum, all CLEM-29 ratings (as well as the four factors) differentiated among the groups (confirming criterion three). The hospital clown videos elicited the highest ratings in 21 out of the 29 ratings, all of which referred to positive feelings of amusement and transcendence. Both hospital clown and circus clown prompted equal ratings for hilarious, but the hospital clown additionally elicited feelings of elevation and touch in observers. The nurse

videos, in turn, lacked the elicitation of amusement, but obtained slightly higher levels of uneasiness, whereas the circus clown confused and overexcited observers most; i.e., yielded higher scores that hospital clowns and nurse.

Discussion

Study 2 investigated whether video clips of hospital clowns elicited different emotions than circus clowns and nurses in an online observer sample. One finding worth mentioning is the low overall level of ratings in the negative experiences and emotions, independent of the type of clown. While in the present study, observing a circus clown performing on stage or a hospital clown interacting with patients quite expectedly did not make observers feel anxious or threatened, it is still important not only to investigate positive responses to humorous interventions, but also negative ones. Firstly, an inspection of the standard deviation for the negative responses indicates that there is variation in responses, meaning that some people indeed reported feelings of uneasiness as response to the clowns. Secondly, results from qualitative studies described, albeit rare, negative reactions towards clowns in children (Kingsnorth et al., 2010; Linge, 2011). Thirdly, as Ruch and Rath (1993) showed, positive (funniness/exhilaration) and negative (simple/boredom) evaluations of humorous stimuli exist independently from one another. The number of negatively connoted ratings in the CLEM-29, however, is small, due to the fact that the expert clowns mentioned only few negative reactions. However, as a limitation it needs to be acknowledged that there might be other negative feelings involved in a clown visit, which we failed to identify.

Furthermore, a limitation regarding the sample is worth mentioning. About 19% of participants were excluded from the analyses because their response pattern showed that they emotionally responded to almost none of the 15 videos, resulting in a very low overall mean for these individuals. A reason for this could be the fact that a considerable proportion of participants received course credit for participation, in combination with the long duration of

the completion of the study (participants were asked to watch 15 video clips and respond to 29 items after each clip). These individuals might have dropped out otherwise, but finished instead without truthfully engaging in the task.

Dimensionality of the CLEM-29

One aim of Study 2 was to investigate the dimensionality of emotions elicited by clown videos, meaning the quantity of dimensions needed to account for the 29 adjectives and short phrases which were considered to be relevant in the context of clowning. We found four dimensions referring to the feeling of *transcendence, uneasiness, arousal,* and *amusement*, which account for three-quarters of the reliable variance in the ratings. The factorial structure, however, is complex, suggesting that some ratings need to be eliminated. Maybe also other ratings need to be added so that also the meaning of the minor factors becomes clearer. A closer inspection of the bipolar factor of *arousal* shows that the pattern of the positive pole mirrors the factor of *transcendence*, and the pattern of the negative pole some *amusement*-ratings. This bipolar factor might be a result of the heterogeneity of the two types of clowns, and some ratings might have gained a different connotation depending on the type of clown. For example, while watching a hospital clown, participants might have interpreted their speechlessness as a positive feeling state, induced by the moving and surprising work of the clown. While watching the circus clown, feeling speechless might have been closer to a feeling of confusion and irritation. As noted by Ruch and Rath (1993), the humour response includes perceptions of the feeling state as well as perceptions of the stimulus properties. It might be that for some videos, participants described their experiential level (e.g., “I feel overexcited”), but for some other videos, characteristics of the stimulus were rated (“the clown is overexcited”), although the general instruction was to rate your own feeling state on all dimensions. Within one clown category, however, most ratings showed high internal consistency, suggesting that the understanding of some ratings varied not across all videos,

but across conditions. This might more be the case for some ratings (e.g., overexcited, speechless) than for others (e.g., exhilarated, blessed).

Differences between feelings elicited by circus clowns, nurses and hospital clowns

Study 2 finally investigated whether the ratings could discriminate between the emotional experience in response to videos of hospital clowns, nurses or circus clowns (criterion three). In line with expectations, both circus and hospital clowns embodied the humorous aspect of a clown interaction, but only the hospital clowns were able to elicit feelings of transcendence, that is, privilege and appreciation, on top of amusement. Transcendent experiences were also elicited by the nurse videos, which, as expected, were missing the humorous aspect. The hospital clowns induced feelings of bliss in observers, maybe through demonstrating how they can bring novelty (surprise) to a clearly structured environment, break with daily routines and how they give power and a sense of control to the patients (i.e., enabling them to engage in an interaction, where the focus is not on their illness, disability, and weakness, but on their strengths and fantasy). After watching hospital clown videos, observers reported very low levels of uneasiness, but higher levels of touch, appreciation and a close connection to the hospital clown. The combination of watching a hospital clown doing good things plus the amusing component in doing so might have produced the highest feelings of bliss. What Adams (2002) intuitively referred to as a combination of love as well as laughter, was also evident in the present study in the form of several ratings referring to transcendence.

As regards the humour response to humorous stimuli, Ruch and Hehl (1998) argued that the perception of jokes and cartoons varies along the three factors of incongruity-resolution, nonsense, and sexual humour. The two types of clown videos used in this study seem to differ in their use of the two structure-based types of humour. Although the clown videos were not chosen according to whether their performance was incongruity-resolution

based or nonsense based, our data suggested that the two types of clowns differed in the type of humour they applied in their performance. Both circus and hospital clowns acted in incongruent ways; they playfully surprised their audience (be it in the clip or the participants of the study), which clearly is a desired response to a clown. However, the circus clown led to more confusion, a feeling that can be linked to a more nonsensical humour style. In terms of the aim of hospital clowns (to do good), it is crucial that they produce a positive state in their audience. The hospital clown does not wish to confuse people (e.g., feeling of disturbance). The results of this study underpin this aim: The hospital clown elicited high feelings of surprise, as did the circus clown, but low confusion. This fits to results of the qualitative study by Linge (2011). She identified emotional dimensions relevant to the hospital clowns work: Surprise/startle, interest/excitement, and enjoyment "without demands." We found feelings of surprise, (over-) excitement and various facets of joy (e.g., exhilaration, hilarity) in our participants' reactions.

General Discussion

Results of the two studies give an insight into the specific emotional reactions towards clowns and their effect on observers. We identified a range of different feeling states that turned out to have a distinct quality, many of which are not captured by known models of mood. These clown-specific experiences cover a variety of states relating to amusement, transcendence, arousal, and uneasiness. They help to predict the intensity of global positive and negative experiences when watching the videos of clowning. Furthermore, they distinguish between circus clowns, nurses and hospital clowns in their effect on observers. An interesting finding was that feelings of uneasiness played only a minor role in this study. One of the main contributions of this study is that it goes beyond past research in that we could identify and describe a great variety of emotional states elicited in observers watching hospital clown scenes.

Limitations

This research led to promising results regarding the emotional experiences elicited in observers by a hospital clown in comparison to a circus clown or a nurse. Nevertheless, more studies are needed that more precisely and comprehensively describe positive and negative effects a clown intervention could have. In our studies, adult non-patient individuals watched clowning and nursing video clips. It has yet to be shown whether the same emotional responses can be found in more representative samples, as well as in clinical settings, that is, among people in need of care. The limitation within the present samples with respect to age and education is that many participants were rather young, students or former students with an academic degree.

Furthermore, more mood-influencing factors should be taken into account in an in vivo study. For example, the personality of the patient (e.g., trait cheerful vs. serious individuals), factors regarding the health issue of the patient (e.g., pain, drug influence), humour characteristics of the clown, but also factors regarding relatives and staff (e.g., acceptance of the clown intervention, support) need to be studied more closely.

Also, it is not clear yet whether the present list of adjectives and short phrases is the final list of all relevant emotional states in the context of clown visits. This list was compiled with the help of laypersons watching clowning videos, and with expert clown interviews. Asking hospital clowns what they think they elicit in the patients has advantages and disadvantages. On the one hand, these clowns are directly involved in the interventions on a regular basis, and can draw from many years of experience. They observe the immediate responses of patients and visitors (e.g., smiling and laughter), they talk to relatives and staff, and they share their knowledge and experiences with other clowns. On the other hand, their perception might be biased in that they are not objective observers of the situation, but participating observers, and might concentrate more on the positive reactions, leaving out

possible negative side effects. Also, they can only report what they see or hear, but there might be a whole range of other emotions elicited, which the patients do not or cannot report (e.g., children, or adults with dementia). All in all, it cannot be ruled out that our expert clowns were reporting their subjective views that would not be fully shared by others. In a second step, it will be important to also ask patients directly involved in such a situation about their emotional reactions.

Hospital clowns do not only work with adult patients, but also with children and adolescents. It needs to be verified that all dimensions play a role at young age already, and whether the visit of a clown has the same impact on an adult patient as on a child. As Costa Fernandes and Arriaga (2010) showed, the effect of a clown accompanying a child in a preoperative phase was different for different age groups. It might be that at young age the amusing aspect and distraction have priority, and feelings of privilege, appreciation or seduction only become more important in adulthood. Also it is still unclear whether the absence of uneasiness while watching a hospital clown performance is only due to a methodological artefact (i.e., no real interaction with a clown equal no need to worry), and could emerge in an in vivo situation, or whether hospital clowns in adulthood indeed do not elicit negative feelings.

Implications for future research

Future research should focus on identifying all relevant domains of experiences that play a role in the reaction of observers and patients to a hospital clown, and have a closer look at the dimensionality (i.e., the factorial structure) of these adjectives and short phrases in other observational as well as in real clown intervention studies. Furthermore, the results presented in this research should gain more validation by including data other than self-report. It is of interest whether the observed rise in a variety of positive emotions to a hospital clown compared to a circus clown or nurse is visible on other levels, for example, they should be

validated by indicating changes verified in face, body language, and later actions of patients. At a behavioural level, they could be observed by analysing the facial expressions of patients in such an intervention to distinguish smiles and laughter that occur due to the truly felt emotion of joy (i.e., the Duchenne smile; e.g., Platt et al., 2013) from a fake or masking smile that could occur out of politeness or learned social rules, or out of the attempt to cover uneasiness. This could help to train clowns by fostering their awareness to different behaviours, causing differences to the response profiles induced.

Also it might be of interest whether there are individual differences in the clown as well as in the patients that lead to a different emotional quality in the clown-patient interaction, and are accompanied by a greater (or smaller) benefit for the well-being of the patient. One could argue that rather humourless (e.g., overly serious) persons, or people who dislike or fear clowns, do not benefit as much from a clown visit than, for example, more humorous and cheerful persons. On the other hand, the type of humour the clown performs might or might not match the type of humour the patient appreciates. So, the clown-patient fit regarding the humour preferences and the humorous temperament is worth investigating.

In conclusion, the present research gives a first overview on the complexity of emotional reactions induced by clowns. Existing research in the context of hospital clown interventions and their effect on patient's well-being has underestimated the variety of emotional states that play a role in the context of the evaluation of hospital clowns.

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PART TWO: POSITIVE EMOTIONS ELICITED BY CLOWNS AND NURSES: AN EXPERIMENTAL STUDY IN A HOSPITAL SETTING

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Introduction

Hospital clown interventions (also referred to as clown therapy, medical clowning, humor therapy, clown visits) have been established in care facilities for many years, aiming at cultivating positive feelings in individuals in a particularly adverse environment such as hospitals or rehabilitation centers (Dionigi, Flangini, & Gremigni, 2012). Although clown interventions are a natural home for psychological humor research, only few empirical studies have attended to such humorous interventions (for an overview see Auerbach, Hofmann, Platt, & Ruch, 2014), none of which have experimentally investigated the direct and immediate effects of these interventions on the emotional state of patients.

The existing literature on hospital clown interventions is reduced to experience reports of clowns working in hospitals (e.g., Adams, 2002; Dionigi et al., 2012), qualitative studies interviewing clowns, hospital staff and patients (Linge, 2013), and very few experiments aiming at a systematic empirical investigation of the effects of such interventions on patients (without highlighting changes in emotional states in detail). The former two sources of information (experience reports and qualitative studies) describe a variety of emotions emerging during such interventions including amusement and emotional states transcending the typical humor response. For instance, one of the pioneers in the field, Patch Adams (2002) characterizes the work of hospital clowns as *love-strategy* formed by the combination of *humor* (bringing fun to people and making people laugh) and *love* (treating patients with compassion and generosity, getting close to patients). In his view, it is essential that patients experience joy, fun, being cared for and loved, which results in better health for the patient as well as hospital staff. Linge (2013) concludes that hospital clowns apply a mixed method of humor and empathy and thereby elicit surprise, joy, acknowledgement, appreciation, and a close connection to the clown (*magical attachment*) in children and adolescents. The third source (quantitative studies using an experimental design) compares clown-induced changes

such as unspecific positive affect (feeling happy) and the reduction of worries (e.g., Costa Fernandes & Arriaga, 2010), agitation (Low et al., 2013), or changes in physical conditions such as electrodermal activity, and blood volume pulse (Kingsnorth, Blain, & Keever, 2010) to control groups without intervention. However, nothing much can be said about the effects on positive emotions. Studies either do not allow attributing the found effects explicitly to the hospital clown intervention as they lack sufficient standardization during the interventions, or no comparison interventions are established and thus no effects can be compared. In case comparison groups are established, studies demonstrated a reduction of negative emotions (e.g., children's preoperative anxiety; Vagnoli, Caprilli & Messeri, 2010), but did not look at the positive emotional state of subjects. In summary, these studies fail to highlight the psychological mechanisms that lead to the observed changes in physical or mental conditions in patients. Therefore it is the first aim of the present research to investigate which emotional states are elicited in patients during a hospital clown intervention in comparison to a different kind of intervention using a controlled experimental design in a natural hospital setting. A nurse assessment will be chosen for comparison, because a nurse is also attentive and caring, but has no explicit humorous mission. This allows for studying whether hospital clowns add a unique component to the hospital, thus making them irreplaceable and giving scientific support for a legitimation of clown visits to practitioners, especially policy makers in care facilities.

Nature of emotional states during clown interventions

According to Adams' (2002) *love-strategy*, a hospital clown intervention contains two aspects: humor and love. The emotional reactions of individuals to humor have been studied widely in humor research. Ruch (2009) describes the affective response to humorous stimuli as amusement (or *exhilaration*[1]). Amusement is displayed on a behavioral (e.g., smiling and

[1] The term *exhilaration* is derived from its Latin root (hilaris = cheerful) to denote either the process of making cheerful or the temporary rise in cheerful state (Ruch, Köhler, & van Thriel, 1997).

laughter), physiological (e.g., changes in heart rate and skin conductance) and experiential level (e.g., changes in emotional state and frame of mind). Being a humorous stimulus, hospital clowns are expected to elicit exhilaration (or amusement) in individuals, which involves measurable changes in the subjective level of felt amusement.

The love-aspect, that is, the nature of emotional states elicited in patients when interacting with a "loving" clown, has been described in qualitative studies, which give examples of facets of positive emotions transcending the humor response (e.g., feeling attached to the clown; Linge, 2013). The first quantitative study investigating the love-aspect showed that subjects watching films of hospital clown-patient interactions reported a higher level of *transcendence* compared to nurse-patient interactions and circus clown performances. The authors define transcendence as the feeling of being uplifted and surpassing the ordinary, for example feeling elevated, privileged, appreciated by and associated with the clown (Auerbach et al., 2014). The study showed that in order to measure changes in emotional states according to hospital clown interventions, general mood scales are only of limited help as they are not specific to clowning and they neither capture humor-related changes in emotional states nor changes transcending amusement. The *29 Clown Emotion List* (CLEM-29, Auerbach et al., 2014) was developed to close the gap in research. It consists of 29 single ratings of emotional states, which can be reduced to the four factors of *amusement* (e.g., hilarity, playful), *transcendence* (e.g., elevated, appreciated), high (e.g., overexcited) vs. low (e.g., speechless) *arousal*, and *uneasiness* during clown interventions (e.g., fearful, threatened). However, the research was conducted with observers of the interventions, which leaves the question open whether the results can be translated into the natural hospital setting with patients being actively involved in the intervention.

Possible roles during a hospital clown intervention

In a typical hospital clown intervention there is often more than one person present: sometimes one patient is the focus of attention, while others are standing by and are merely observing without necessarily being engaged (e.g. parents), other times other individuals are being involved by the clowns (e.g. other patients) or are working together with the clowns (e.g., hospital staff; see also Dionigi et al., 2012; Low et al., 2013). Linge (2013) reported that both observing staff and children involved in clown interventions reported the occurrence of the same feelings of joy and acknowledgement. Two conflicting mechanisms need to be taken into account when hypothesizing about the emotional states in individuals sharing the same social environment (a hospital clown intervention) while being in different roles: Effects of *emotional contagion* and effects of experiencing *other-praising emotions*. Hatfield, Cacioppo and Rapson (1994, p. 5) define emotional contagion as '[…] tendency to automatically mimic and synchronize expressions, vocalizations, postures, and movements with those of another person and, consequently, to converge emotionally'. Emotional contagion during a hospital clown intervention could mean that the participating subject would infect the observer(s) with their emotional state. In contrast, Algoe and Haidt (2009) subsume the emotions of elevation, gratitude and admiration under other-praising emotions, which were elicited explicitly in observers who witnessed an act of moral virtue or beauty such as charity or generosity, and differed in physiological experiences and action tendencies from emotions elicited when watching funny films (e.g., amusement). Given that a clown doing beneficial work in a hospital can be viewed as an act of moral beauty, it could be argued that observers experience different emotions than participants of clown interventions. For example, being involved in the clowns' jokes and tricks might result in feelings of amusement and playfulness, whereas observing it might result in a feeling of elevation, touch, or gratitude (and thus transcending the humor response). To shed light on the issue, the second aim of the present research is to

investigate the difference in emotions between a participating and an observing patient during a hospital clown intervention.

Aims and hypotheses

Firstly, the present study compares the baseline emotional state of hospitalized patients with emotional reactions during a hospital clown intervention and a non-humorous control intervention (a typical nurse assessment). Ruch (2009) described the emotion of exhilaration (elicited by a humorous stimulus) as pleasurable, relaxed excitation. Hence, the hospital clown intervention is hypothesized to lead to higher feelings of amusement and arousal than the nurse intervention and baseline assessment. Compared to baseline, it is expected that both interventions raise the level of transcendent feelings as they subsume feelings occurring in a situation where the patient is the focus of attention (e.g., appreciation, association with the interacting partner). However, the clown intervention is expected to exceed the nurse intervention in the level of induced feelings of transcendence (as shown in Auerbach et al., 2014). Basically, neither the nurse nor clown intervention is expected to elicit feelings of uneasiness. However, as some individuals fear clowns, and associate nurses with both pain and relief, the level of uneasiness will be studied here, too.

Secondly, the study investigates whether the emotional states of patients differ as a function of their role during the two interventions. In terms of amusement (which has a highly contagious effect, e.g., Wild, Erb, & Bartels, 2001), no difference between participating and observing patients in either intervention is expected. As amusement is an aroused emotion, we also expect no difference in arousal between participant and observer. On the other hand, we assume that observers experience higher feelings of transcendence (as they observe an act of moral kindness) than participants. As none of the interventions are expected to elicit negative feelings in patients in general, also no difference between the roles are expected.

The study with observers (Auerbach et al., 2014) showed that a global positive judgment of clown interventions could best be predicted as a combination of both amusing and transcendent emotional states. To replicate and extend those results, the present study thirdly investigates whether the clown-specific emotional dimensions contribute to the prediction of a positive judgment of the hospital clown intervention, over and above a general preference for clown performances.

Method

Sample

The sample consisted of $N = 42$ German speaking patients from a physical rehabilitation center (81% male). Age ranged from 19 to 75 years ($M = 45.36$, $SD = 16.56$). Reasons for treatment were prior accidents resulting in paraplegia, amputations, or multiple injuries. Forty-two percent of patients had prior experience with hospital clown interventions, of which 40.5% had had more than one clown visit. Inclusion criteria were age 18 or older, voluntary participation, not bedridden, and being cognitively and physically able to participate in the study. The latter was decided based on the assessment of the psychologists and nurses working in the clinic, and on personal impressions of the two investigators (both psychologists) in conversations with the patients.

Instruments

The *29 Clown Emotion List* (CLEM-29; Auerbach et al., 2014) is a collection of 29 positive and negative adjectives and short phrases assessing the current emotional state in the context of clowning. All single items are rated on a 7-point Likert scale ranging from 1 (= ‘not at all’) to 7 (= ‘very strongly’). A factor analysis of the ratings produced four factors, three of which were unipolar (amusement, transcendence, uneasiness), and one was bipolar (all ratings of the bipolar factor relate to different states of arousal). The single ratings as well as the factors have been proven to be sensitive in capturing changes in clown-induced

emotional states. In an observer study, items related to transcendence predicted a general positive evaluation of clown interventions over and above feelings of amusement.

The state version of the *State-Trait-Cheerfulness-Inventory* (STCI-S<30>; Ruch, Köhler, & van Thriel, 1997) is a widely used, reliable and valid 30-item state measure of the three dispositions for the induction of exhilaration, that is, cheerfulness, seriousness, and bad mood (Ruch & Hofmann, 2012). For the present experiment three items were used, each one best representing the corresponding scale ('I am cheerful', 'I am in a serious frame of mind', and 'I am in a bad mood'). The answer format is a 4-point Likert scale ranging from 1 (= 'strongly disagree') to 4 (= 'strongly agree').

The *Hospital Study Evaluation Form* (HSEF; Auerbach & Fehling, 2012) was created for use in the present study and consists of three sets of questions serving different functions. The first set (HSEF-General, eight items) was constructed to back up the cover story (to evaluate the hospital routine and work of hospital staff; see procedure) and was given to subjects at the beginning of the experiment. It contained general questions regarding the stay in the care facility (e.g., quality of meals, quality of care). The second set was used to collect information about subjects' perception of the experienced interventions (HSEF-Current, seven items) and was given after each intervention. It contained specific questions regarding the current interventions, the level of global positive and negative feelings during the situation, and the perceived role of subjects during the situation (participating or observing). The answer format for the HSEF-General and HSEF-Current is a 7-point Likert scale ranging from 1 to 7 (with different scale anchors depending on the type of question asked). The third set of questions (HSEF-Preferences, 15 items) concerned subjects' perception of general preferences for clowns and nurses, and was given to subjects at the end of the study. Items (e.g., 'How funny do you think the clown performance was'?) are rated on a 5-point Likert scale ranging from 1 (= 'not at all') to 5 (= 'very much').

Experimental design

The experimental design was a 3 (*conditions, within subjects variable*) x 2 (*role of subject, between subjects variable*) mixed factorial design. The three conditions were the baseline (no intervention), the humorous intervention and the non-humorous intervention. The order of the two interventions was randomly assigned for each trial with the help of a computer-based research randomizer. The role of subject consisted of either the role of the participant (actively involved in both interventions) or the role of the observer (in the same room as the participant, but not involved in the interventions). The role was also randomly assigned[2] and stayed constant throughout the experiment. Subjects were blind to the assignment of a role, and to the types of interventions conducted. The dependent variables were subjects' emotional states during and judgments of the two interventions, using the CLEM-29 dimensions, the STCI-S ratings, and the HSEF ratings.

Procedure

Prior to the study, the local ethics committee approved the study, and all participants gave their written consent to take part in the study. Patients were recruited in the rehabilitation center with the cover story to participate in a study evaluating the work routine and patient satisfaction in hospitals. They were informed about two non-invasive routine assessments carried out by members of hospital staff in the room, which they should evaluate afterwards. Subjects were neither informed that a nurse nor that a clown would participate in the study. The procedure was highly standardized. Two patients took part in every trial, and all trials were conducted in the same room, containing two tables, each with two chairs with about 2 meters distance between the tables (mirroring a typical setting for the clown visit, e.g., a

[2] Assignment of the role was made unobtrusively prior to each trial by the experimenter on the basis of randomization and a rule: Two chairs (A and B) were available in the room, for the two subjects who took part in the experiment at a time. The rule was that the subject in chair A was always the participant throughout the experiment, whereas the subject in chair B was always the observer. Both subjects waited in front of the experimental room, and were invited in by the experimenter simultaneously. Prior to the study, it was randomly decided for each trial, which chair would be assigned to the subject entering the room first.

recreation room in the rehabilitation center). Patients were placed at the tables, both facing the door. It was highlighted that several questions regarding their current thoughts and feelings would be asked repeatedly, and they were asked to rate them each time according to their current state. After the experimenter explained the questionnaires to the patients, she left the room and all further instructions were given in written form.

First, subjects filled out the CLEM-29 and STCI-S (baseline assessment) and the HSEF-General to support the cover story. Once both subjects finished the first set of questionnaires, they gave an acoustical sign and the first intervention started (either clown or nurse, randomly decided). Subjects subsequently filled out the CLEM-29, HSEF-Current and STCI-S. Once both subjects finished the second set of questions, the second intervention was carried out, followed by the third set of questions (CLEM-29, HSEF-Current, STCI-S). At the end of the experiment, patients were debriefed about the real aim of the study (to investigate emotional reactions to hospital clowns and nurses) and were asked to give their consent again. All subjects agreed in written form not to disclose the use of clowns in the study to other patients until the study was completed. Finally, they were asked to fill out the HSEF-Preferences.

The interventions

Clowns and nurses were instructed only to involve the participating patient in the intervention. It was highlighted that the interventions should be carried out as standardized as possible, but also as realistic as possible, meaning that in case the observing subject made an attempt to communicate with the clown/nurse, they should not ignore them but react in a natural way before bringing the participant back into focus. Furthermore, they were instructed to restrict the stay in the room to a length of five to eight minutes.

The hospital clown intervention was a humorous intervention aimed at enhancing the patients' positive emotional state. The shortest intervention lasted 4.00 minutes, and the

longest 8.85 minutes, with a mean duration of 6.62 minutes (*SD* = 1.17). One clown pair (male clown aged 49, female clown aged 44; together 13 years of experience in hospitals and on stage) carried out all trials. Costumes and make up were held constant during all interventions. The male clown carried a ukulele, wore a Doctor-like jacket, and the red nose. The female clown wore a yellow dirndl dress with yellow socks, a pink blouse, and the red nose. She had an abnormally large handbag in one hand filled with requisites; e.g., a pig nose that makes a farting sound when squeezed, and a thimble, used to demonstrate a magic trick together. The clown pair behaved like Auguste and Whiteface: the male clown was the foolish, clumsy and more sensitive partner, while the female clown was more dominant, slightly aggressive, bossy and pompous.

The nurse intervention was a standardized routine assessment of patient's health status. Nine nurses (six female, M_{age} = 36.56, SD_{age} = 8.08) were utilized in the experiment, all of which were members of staff at the rehabilitation center at the time of the experiment, with a minimum work experience of two years, and a maximum of 28 years. Each nurse performed the nurse intervention with the help of the same standardized interview guide. It was developed with the help of a health professional experienced in nursing assessment, and contained 13 questions regarding the overall state of health, pain level, sleep quality, mobility, and an assessment of vital signs (temperature, blood pressure, pulse). The tool was created for the standardization of the assessment and the data was not used for analysis. All nurses wore their medical scrubs and used their standard hospital equipment. Beforehand, each nurse was trained in how to conduct the standardized assessment, and was given the opportunity to carry out one test intervention with the experimenter. The interventions lasted between 3.38 and 11.29 minutes, with a mean length of 7.34 minutes (*SD* = 2.29).

Results

Manipulation checks

Repeated measures ANOVAs with condition as repeated measurement factor were carried out to test whether the two interventions had the intended quality. The clown intervention was rated funnier than the nurse intervention, $F(1,40) = 27.27$, $p = .001$, subjects felt more cheerful afterwards, $F(1,41) = 5.00$, $p = .03$, and they felt a higher level of global positive feelings after the clown intervention than after the nurse intervention, $F(1,40) = 5.18$, $p = .03$. The two interventions did not differ in terms of liking, $F(1,38) = 1.04$, $p = .31$, or aversion, $F(1,38) = 0.33$, $p = .57$. As expected, ratings of negative emotions were very low after both interventions and did not differ between the two, indicating that most subjects did not experience negative emotions (e.g., global negative feelings after the intervention, $M_{clown} = 1.75$, $M_{nurse} = 2.00$; scale from 1-7). The two randomly assigned groups of participants and observers did not differ in their judgment of the funniness of clowns in general, $F(1, 39) = 3.42$, $p = .07$, the general liking of clowns, $F(1,39) = 3.29$, $p = .08$, and the general aversion towards clowns, $F(1,39) = 0.12$, $p = .73$. A check of whether the randomly assigned role (which was held constant throughout the experiment) converged with the perceived role during each intervention revealed that during the nurse intervention subjects perceived their role with high accuracy (only one wrong perception). During the clown intervention, the perceived role differed from the assigned role to a greater extent: 16.67% of assigned observers stated that they were actively involved in the clown intervention, whereas 47.62% of assigned participants stated that they were more in an observing role. The correlation between assigned and perceived role was $r = .89$ ($p < .001$) in the nurse condition, and $r = .33$ ($p < .05$) in the clown condition. Hence, in the following section results regarding the randomly assigned role should be interpreted with caution.

Data preparation for hypotheses testing

An inspection of the distribution of all single ratings of the CLEM-29 at three measurement points revealed that 27 out of 87 (31.03%) ratings were not normally distributed

(Skewness and Kurtosis below -2.00 or higher than 2.00). This was due to a floor effect of some ratings, especially the negative ones. To correct the distribution issues, to reduce the number of analyses, and to make the ratings more reliable, it was decided to conduct a principal component analysis (PCA) of the ratings from the hospital clown intervention. Since the sample size was too small to meaningfully conduct a PCA, ratings from the present study were merged with ratings from an earlier study using observers of clown and nurse interventions (Auerbach et al., 2014), and subjected to a PCA and rotated according to the Oblimin criterion. The first seven eigenvalues were 11.86, 3.80, 2.41, 1.91, 1.02, 0.83, and 0.67. The screeplot and a parallel analysis suggested the retention of four factors. The factor loadings, which together explained 68.89% of the variance, are displayed in Table 1. All factor scores were normally distributed. No significant correlations with age or gender were found for any of the factors.

Table 1.

Pattern matrix of a joint principal component analysis of CLEM-29 ratings

	Transcendence	Uneasiness	Amusement	Arousal
Privileged	**.92**	.06	-.14	.11
Rise	**.86**	.12	-.06	-.03
Elevated	**.84**	.03	-.11	-.11
Blessed	**.84**	-.04	-.06	.06
Appreciated	**.77**	-.12	.15	.14
Took	**.76**	-.01	.13	.15
Seduced	**.75**	.03	-.06	-.27
Flirty	**.72**	.05	-.04	-.43
Freed	**.68**	-.10	.24	-.06
Associated	**.66**	-.04	.15	.31
Active	**.50**	-.07	.29	-.02
Imaginative	**.50**	.02	.36	-.33
Playful	**.47**	-.02	.35	-.45
Threatened	.03	**.85**	-.12	-.06
Fearful	.02	**.83**	-.10	.07
Creepy	.00	**.80**	-.17	-.11
Confused	-.20	**.71**	.20	-.11
Laughter	-.19	-.10	**.92**	-.09
Hilarity	.05	-.12	**.87**	-.14
Surprised	-.02	.27	**.81**	.14
Exhilarated	.14	-.16	**.78**	-.09
Puzzled	.21	.42	**.53**	.10
Impressed	.44	.05	**.51**	.31
Curious	.41	.05	**.49**	.00
Overexcited	.12	.28	.27	**-.66**
Naughty	.32	.13	.30	**-.57**
Touched	.55	-.05	.19	**.56**
Schadenfreude	-.02	.38	.16	**-.55**
Speechless	.24	.46	.24	**.46**

Note. N = 403. Extraction: Principal component analysis. Rotation: Oblimin. Boldface indicates highest factor loadings in a row. Rise = rise above yourself; Took = took something away from it; Laughter = burst into laughter; Associated = associated with the clown.

As displayed in Table 1, the ratings formed four factors. They were analogously to Auerbach et al. (2014) labeled *transcendence* (merging more inward feelings of privilege, elevation and appreciation and more active and outward feelings of liberation, feeling seduced and playful), *uneasiness* (threatened, fearful, creepy, confused), *amusement* (e.g., feelings of hilarity, exhilaration, surprise, curiosity), and *high vs. low arousal* (bipolar factor merging more calm feelings on the positive pole such as touched, speechless, and more aroused feelings on the negative pole such as overexcited, naughty, *schadenfreude*). Ratings on the

bipolar factor showed second loadings on other factors, e.g., speechless loaded almost as high on uneasiness, and feeling touched loaded also on transcendence.

Effects of condition

To test the effect of the conditions, it was analyzed whether patients experienced different levels of transcendence, amusement, arousal, and uneasiness at the baseline and after the clown and nurse interventions. Repeated measures ANOVAs with condition as repeated measurement factor were computed with the factor scores of the four CLEM-factors as dependent variables[3] (see Table 2).

Table 2.

Descriptive statistics and results of ANOVA at baseline, after clown and nurse condition

	Baseline		Clown		Nurse		ANOVA	
Factor	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*(2,68)	η^2
Transcendence	0.09_a	0.64	-0.31_b	0.65	-0.48_b	0.66	17.52**	.34
Uneasiness	-0.54	0.76	-0.38	0.88	-0.56	0.73	1.00	-
Arousal	0.30_b	0.70	0.68_a	0.72	0.68_a	0.56	5.85*	.15
Amusement	-0.27_b	0.93	0.96_a	1.41	-0.60_b	0.87	35.88**	.51

Note. $N = 35$. *M* = mean, *SD* = standard deviation. η^2 = partial η^2. Presented factor scores were estimated using the regression method.
Subscripts $_a$, $_b$, $_c$ indicate significant results of pairwise comparisons (Bonferroni-corrected), where $_a > _b > _c$.
*$p < .01$. **$p < .001$.

As displayed in Table 2, there was a significant effect for condition in the factors transcendence, amusement, and arousal, and no effect in the factor uneasiness. The level of amusement was higher after the hospital clown intervention than at baseline and the nurse intervention, with no difference between the latter two. Both interventions led to a raise in arousal compared to baseline. Interestingly, the level of transcendence was highest at baseline, and was lowered during both interventions with no significant difference between

[3] ANOVA's with presentation order as between variable (clown or nurse first) revealed the order of the interventions did not influence the results.

the clown and nurse intervention (with a numerical trend towards higher feelings of transcendence after the clown than after the nurse intervention).

Effects of role of subject

Next, we examined the emotional state of subjects as a function of their role during the two interventions. A manipulation check revealed that at baseline, no difference was found between participants and observers in their level of transcendence, $t(37) = .91$, $p = .37$, amusement, $t(37) = .30$, $p = .77$, arousal, $t(37) = -.52$, $p = .61$, and uneasiness, $t(37) = -.48$, $p = .63$. To test the hypotheses, four repeated measures ANOVA's were conducted with intervention (clown vs. nurse) as repeated measurement factor and role (participant vs. observer) as between-subjects factor (Table 3).

Table 3.

Results of 2 (condition) x 2 (role) repeated measures ANOVAs

	$F(1,33)$	η^2
Transcendence		
Condition	2.76	-
Role	0.28	-
Condition x Role	1.90	-
Uneasiness		
Condition	1.72	-
Role	0.17	-
Condition x Role	0.19	-
Amusement		
Condition	46.39*	.58
Role	0.56	-
Condition x Role	0.53	-
Arousal		
Condition	0.00	-
Role	0.56	-
Condition x Role	0.00	-

Note. $N = 35$. $\eta^{2 =}$ partial η^2.
*$p < .001$.

As displayed in Table 3, none of the main effects for role, and no interactions were significant for any emotional dimension[4]. Hence, the role of subjects did not moderate the effect of type of intervention on the emotional state. As expected, there was a main effect for intervention in amusement with the clown intervention leading to a higher feeling of amusement than the nurse intervention.

Prediction of an overall evaluation of the clown intervention

Prior research with observers of clown interventions showed that in order to predict the total amount of positive affect of individuals while observing a clown visit, a combination of the "humor" and the "love"-aspect was required: the more people felt cheerful *and* associated with/touched by the clown, the higher their intensity of positive feelings was (Auerbach et al., 2014). To replicate and extend these results to patients in the hospital setting, we investigated the predictive value of the CLEM-29 dimensions for the total amount of positive affect experienced during the clown intervention while controlling for general preferences for clown performances. The bivariate correlations between the criterion (total amount of positive affect[5]) and the predictors were of small to moderate size (transcendence: $r = .45$, $p < .01$, unease: $r = -.14$, n.s., amusement: $r = .42$, $p < .01$, and arousal: $r = .19$, n.s, general funniness of clowns: $r = .60$, $p < .01$, aversion to clowns: $r = -.10$, n.s.). In a hierarchical multiple regression analysis (block 1, method enter: general funniness and aversion of clown performances, HSEF-Preferences); block 2, method stepwise: amusement, transcendence, arousal and uneasiness, CLEM-29), the total amount of positive feelings during the clown visit was best predicted ($R^2 = .50$ in the final model) by a combination of general funniness of clown performances ($\beta = .58$, $p < .001$) and felt transcendence ($\beta = .39$,

[4] Although manipulation checks revealed that not all participants were aware of their assigned role, results were highly comparable when participants with incorrect role judgment were excluded.
[5] The criterion was: „Please rate you level of positive feelings that you experienced during the situation" (7-point Likert scale from „not at all positive" to „very strongly positive").

$p < .01$; $\Delta R^2 = .14$)[6]. Transcendence added incremental validity to the prediction over and above funniness of clown performances in this sample of patients, supporting the idea that both amusing and transcendent emotional states play a role in clarifying the effect of hospital clown on patients' positive emotional state.

Discussion

The present study investigates the effects of a hospital clown intervention compared to a nurse intervention on the emotional state of patients using a controlled experimental design in a natural hospital setting. Overall, the study shows that hospital clowns are indeed able to elicit a positive emotional state in individuals that are exposed to an adverse environment (here: hospitalized patients due to injuries or illness). We found changes in the expected direction with the hospital clowns eliciting a higher level of amusement than the nurse intervention and baseline assessment. The interventions also had the intended quality: Subjects liked both interventions equally and to a high extent, but the hospital clown intervention was perceived funnier than the nurse intervention. This is the first experimental study to demonstrate differences in the emotional state of patients as a function of two different kinds of interventions; hence, the reported difference can clearly be attributed to the hospital clown intervention. Furthermore, the interventions influenced the patient's emotional state independently of their active or passive role in the situation. This speaks in favor of the emotional contagion hypothesis (Hatfield et al., 1994), and highlights that hospital clown interventions have a positive effect on the level of amusement not only in the targeted person of the intervention, but also in people watching.

Unexpectedly, the level of transcendence was highest at baseline, and was lowered during both clown and nurse intervention. Tentatively interpreted, one could argue that the cover story and the recruiting method might have influenced the level of transcendence at

[6] The incremental validity of the factor of transcendence in predicting the global positive feelings towards the clown intervention was also high when including the current instead of general assessment of funniness and aversion of the clown performance.

baseline. Many patients in the sample were paralyzed and have partially lost their autonomy. Being a valuable aid to the research might have given subjects a sense of meaning and worth. Nevertheless, a tendency towards a higher level of transcendence during the clown intervention compared to the nurse intervention was observed (but not significant), which goes in the intended direction. Future research should utilize a larger sample size and a more neutral cover story to investigate the elicitation of transcendence in patients during an experiment.

The regression analysis showed that when looking only at the hospital clown intervention, both amusing and transcendent components played an important role in the prediction of the global judgment of the situation. The higher the combination of patients' funniness ratings of clown performances *and* their felt level of transcendent feelings during the intervention (i.e., privileged, appreciated, blessed and so on), the higher is the positive global evaluation of the clown intervention. This adds a new component to prior research inasmuch as patients' positive evaluations of clown visits are predicted by emotions going beyond the typical 'humor response'. This gives scientific support to implicit theories and assumptions of practitioners such as Patch Adams (2002), who feel that the clown's mission in hospitals is more than just to amuse and entertain patients in need of care. Presumably the positive feelings elicited by hospital clowns might broaden the scope of attention and perception, helping the patient to escape the daily hospital routine and focus on other aspects of life. This liberating effect of clowning has been described in the *liberation theory*: A humorous intervention frees people from accustomed concerns, conflicts, or modes of processing and provides "release from our stabilizing systems, escape from our self-imposed prisons. Every instance of laughter is an instance of liberation from our controls" (Mindess, 2010, p. 23).

Limitations and outlook

The present research has some limitations. First, experimenter and recruiter were not blind to the aims of the study, which might have influenced their behavior towards the subjects. However, we tried to minimize possible effects through a high level of standardization and no contact between the experimenters and subjects during the trials. Second, the used cover story and recruiting method might have affected the level of transcendence at baseline assessment. Future studies should replicate the findings with a more "neutral" cover story. Third, more than one nurse was used to operationalize the nurse intervention. This was due to organizational reasons in the hospital and could not be avoided. Future experiments should focus on matching the two interventions using same clown pair and nurse. Fourth, the assignment of roles was only partly successful. A reason for the incongruity between perceived role and assigned role during the clown visit might be that the two clowns did not involve only the participants as clearly in the activity as the nurse did. Some patients were acquainted with the clowns from prior clown visits, and started an interaction right away (although unknowingly being in the role of the observer). However, an analysis excluding all misperceiving subjects did not change any results, which speaks in favor of the contagious effect of the clown intervention. Last, the present study included only self-reported ratings of emotional states in the analysis. Future experiments should validate the results through objective measures of emotional states (e.g., the facial display of amusement). Another point to consider is that humor research showed that the reaction of an individual to a humorous stimulus is related to the kind of stimulus presented (e.g., Ruch & Rath, 1993). In the present study it was decided to use the same clown pair in all trials to control for the effect of the different features of different humorous stimuli. As a result, findings cannot be generalized to other forms of clowning interventions.

Nevertheless, the study gives a first impression of the nature of positive emotional states elicited in individuals during a clown visit compared to a nurse intervention. What

clowns working in the field have implicitly known since 1986 (with Michael Christensen laying the foundation stone for the professional hospital clown work in the USA), has now been experimentally verified: Hospital clowns add a unique quality of intervention to the hospital routine and thereby succeed in eliciting a positive emotional state in patients. The results clearly support the implementation of clown visits as a strategy to promote positive feelings in patients in need of care, and hopefully to contribute to more health and well-being in the long run. As was already suggested by experienced clowns working in the field (Dionigi et al., 2012), clown organizations that train clowns to work in care facilities should encourage their clowns to incorporate components of attachment and empathy into their humor-based skills.

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PART THREE: ARE CLOWNS GOOD FOR EVERYONE? THE INFLUENCE OF TRAIT CHEERFULNESS ON EMOTIONAL REACTIONS TO A HOSPITAL CLOWN INTERVENTION

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Manuscript in preparation

Introduction

Whereas in some situations all people behave more or less in the same way, in other situations, individual differences co-determine people's actions and reactions. Research in the field has shown that in situations designed to promote happiness and well-being, the fit between a person's personality and the type of activity is in part responsible for its success (Schueller, 2012; Senf & Liau, 2013). The present study focuses on hospital clown interventions[1], which aim at bringing positive experiences to ailing patients in order to promote their well-being (Dionigi, Flangini, & Gremigni, 2012). To date, no study has investigated whether these humorous interventions are beneficial for all recipients, or whether some groups of individuals benefit more than others (only age or gender were tested so far; e.g., Costa-Fernandez & Arriaga, 2010; Vagnoli, Caprilli, & Messeri, 2010), that is, whether individual differences influence the effects of a hospital clown intervention on the emotional reactions of patients.

Individual differences in emotional reactions to humor

Research on personality and humor demonstrates that people habitually differ in the way they cognitively evaluate humorous stimuli (Ruch & Hehl, 2007), use and communicate humor in everyday life (Craik, Lampert & Nelson, 1996; Fox, Hunter & Jones, 2016), and emotionally respond to humor (Ruch, 2007; Ruch, Hofmann & Platt, 2015). The predominant emotional reaction to humor is *exhilaration*[2] (or amusement), which in classifications of emotions is defined as a facet of joy (Ruch, 1993). One personality trait in particular, *trait cheerfulness*, has been studied in a variety of humor experiments and settings as a stable disposition for cheerful mood states and the easiness with which amusement is induced. Trait cheerfulness is characterized by a prevalence of cheerful mood, a low threshold for smiling

[1] Also referred to as clown therapy, clown visit, medical clowning, or clown care.
[2] Exhilaration has been defined as the main emotional response to humor and denotes either the process of making cheerful or the temporary rise and fall of a cheerful state. To exhilarate in this sense means to make cheerful, or to amuse (Ruch, 1993).

and laughter, a composed view of adverse life circumstances, a broad range of active elicitors of cheerfulness and smiling and laughter, and a generally cheerful interaction style (Ruch, Köhler & van Thriel, 1996). Together with trait seriousness and trait bad mood, it forms the temperamental basis for the sense of humor (Ruch & Carrell, 1998). Trait cheerfulness can be classified into the higher-order dimension of extraversion (Carretero-Dios, Benítez, Delgado-Rico, Ruch & López-Benítez, 2014), but has a higher specificity in predicting the intensity of amusement in response to humor than extraversion (Ruch, 1997). Ruch, Proyer, Esser and Mitrache (2011) postulated five relationships between trait cheerfulness and a cheerful state: high trait cheerful individuals have a lower threshold, a higher intensity, a longer duration, a higher robustness of cheerful mood (even when facing adversity), and a faster mood recovery (after a mood alteration to the negative) than low trait cheerful individuals. These postulations were tested in various experiments and contexts using subjective as well as objective methods, such as the observation of facial signs, to infer on the emotional state (for an overview see Ruch & Hofmann, 2012).

The universal facial expression of enjoyable emotions is smiling (Ekman, 2003). Research has repeatedly shown that there are different types of smiles, but especially one type (*Duchenne smile*) is a valid indicator of genuine enjoyment (Ekman, Davidson, & Friesen, 1990; Sauter, McDonald, Gangi, & Messinger, 2013). It is characterized by the joint and timely corresponding contraction of the zygomatic major muscle (pulling the lip corners up) and the orbicularis oculi muscle, pars lateralis (contracting the region around the eye producing crow's feet). Other types of smiles occur in situations without genuinely felt enjoyment (false smiles or *Non-Duchenne smiles*). These types of smiles are present, for example, when individuals mask a negative emotional state (masking smile) or smile when nothing much is felt (phony smile) but individuals attempt to appear as if positive emotions are felt (Ekman & Friesen, 1982; Harris & Alvarado, 2005). The two different types of smiles

can be assessed with an objective and reliable technique for coding observable facial actions, the *Facial Action Coding System* (FACS; Ekman, Friesen & Hager, 2002a), which enables coding the frequency, intensity, timing, duration, laterality and symmetry of 44 different action units. Ruch and colleagues used the FACS as an objective measure of amusement to demonstrate the influence of trait cheerfulness on the emotional reaction to humorous stimuli. For example, during an interaction with a clowning experimenter, individuals high in trait cheerfulness showed more frequent, more intense and longer lasting signs of facial amusement (Duchenne smiling and laughter[3]) than individuals low in trait cheerfulness (Ruch, 1997). When high trait cheerful individuals saw their own distorted photographs as a surprise, they showed more frequent Duchenne smiling and laughter than low trait cheerful individuals (Beermann & Ruch, 2011). When a virtual companion was present during a funny film, high trait cheerful individuals had higher frequencies of Duchenne laughter than low trait cheerful individuals (Hofmann, Platt, Ruch, Niewiadomski, & Urbain, 2015).

Effects of hospital clown interventions on individuals

To date, a few studies have evaluated hospital clown interventions and have consequently shown that hospital clown interventions can have a beneficial effect on patients. For example, studies found a reduction of preoperative anxiety and worries in children undergoing medical procedures when interacting with a clown compared to a control group without a clown visit (e.g., Costa Fernandes & Arriaga, 2010; Golan, Tighe, Dobija, Perel & Keidan, 2009; Vagnoli, Caprilli, & Messeri, 2010). Regarding changes in positive states after interacting with hospital clowns, one study found an increase in self-rated positive affect in children (Costa Fernandez & Arriaga, 2010), and another study found an increase in self- and parent reported well-being (Pinquart, Skolaude, Zaplinski, & Maier, 2011).

[3] Duchenne laughter typically occurs at higher levels of reported amusement, while Duchenne smiling occurs at lower levels of reported amusement (Ruch, 1993).

Only two studies have examined positive emotions elicited by hospital clowns in individuals in more detail. Auerbach, Hofmann, Platt and Ruch (2014) developed and tested the *29 Clown Emotion List* (CLEM-29), which is a collection of single adjectives and short phrases, but can be reduced to four factors: amusement, transcendence (defined according to its non-religious connotation as the feeling of being uplifted and surpassing the ordinary; e.g., feeling privileged, appreciated, connected to the clown), unease (e.g. fearful, confused) and arousal (high vs. low arousal). Studies that used the CLEM-29 showed that individuals watching videos of (Auerbach et al., 2014) and patients interacting with (Auerbach, Ruch, & Fehling, 2016) a hospital clown reported a higher level of amusement compared to individuals who watched or experienced a nurse intervention. Furthermore, in both samples a combination of amusement and transcendence best predicted the total amount of positive affect after a hospital clown intervention. The authors concluded that a hospital clown intervention induces not only the typical humor reaction in recipients (amusement), but also adds a unique quality to the clown-patient interaction (transcendence).

In summary, previous research has provided evidence that hospital clown interventions are a suitable method to enhance the emotional state of individuals. The studies used subjective assessment tools, either self-reports or external reports of the key variables. So, the next step in a comprehensive evaluation of hospital clown interventions is to validate the subjectively assessed state of patients during the clown intervention by including observable signs of nonverbal behavior. Research has shown that humorous stimuli successfully generate facial amusement in various experiments (Ruch & Hofmann, 2012), and objective and subjective markers of amusement are typically moderately related (Ruch, 1995). Hence, hospital clown interventions are assumed to elicit Duchenne smiles as well, and individuals with more frequent Duchenne smiles should also report a more cheerful state. Another still unnoted issue in evaluations of hospital clown interventions is the personality

influence. Taking into account the trait cheerfulness model and its empirical evidence (Ruch & Hofmann, 2012), it can be assumed that high trait cheerful individuals benefit more from the intervention (i.e., more positive emotions) than low trait cheerful individuals.

Aims and hypotheses

The present study aims to contribute to a better understanding of hospital clown interventions in three ways: the investigation of facial signs of enjoyment during an interaction with a hospital clown, its relationship to subjective states, and the replication of the theory of trait cheerfulness as predictor of the emotional reaction to humorous stimuli. The first hypothesis is that the hospital clown intervention on average elicits Duchenne smiles more often than Non-Duchenne smiles. The second hypothesis is that higher frequencies of Duchenne smiles are associated with higher levels of a positive experience, and lower levels of a negative one, whereas higher frequencies of Non-Duchenne smiles are associated with lower levels of positive experiences, and higher levels of negative ones. The third hypothesis is that high trait cheerful individuals show more Duchenne smiles and less Non-Duchenne smiles, and report higher levels of positive emotions than low trait cheerful individuals.

Method

Sample

The sample consisted of $N = 42$ adult German speaking patients from a physical rehabilitation center (81% male) with paraplegia, amputations, or other multiple injuries. The age of patients ranged from 19 to 75 years ($M = 45.36$, $SD = 16.56$). Inclusion criteria were age 18 or older, voluntary participation, not bedridden, and being cognitively and physically able to participate in the study. Patients were filmed during the study, and videos of a subsample of 26 patients were used for coding facial actions.

Instruments

The standard trait version of the *State-Trait-Cheerfulness Inventory* (STCI-T<60>; Ruch et al., 1996) consists of 60 items to reliably and validly assess trait cheerfulness, trait seriousness and trait bad mood. To compose the *trait cheerfulness* scale in the current study, eight items were selected representing the facets of a low threshold for smiling and laughter and a generally cheerful interaction style (hilarity[4]; e.g., "I am a merry person"). The answer format is a four-point Likert-scale ranging from 1 (strongly disagree) to 4 (strongly agree) and Cronbachs alpha was .87.

The *29 Clown Emotion List* (CLEM-29; Auerbach et al., 2014) is a list of 29 adjectives and short phrases assessing emotional states in the context of clowning. Participants rate their current state on a 7-point Likert scale ranging from 1 (= not at all) to 7 (= very strongly). As the sample size in the present study is too small to test the hypotheses with all single ratings, factor scores were used instead (transcendence, uneasiness, amusement, and arousal; the procedure is described in detail in Auerbach et al., in press), which are sensitive enough to capture changes in clown-induced emotional states (Auerbach et al., 2014).

The *Hospital Study Evaluation Form* (HSEF; Auerbach, Ruch & Fehling, 2016) contains 22 single ratings, of which seven ratings concern the stay in the care facility (HSEF-General; e.g., quality of meals, care) and the evaluation of the hospital clown intervention (HSEF-Current; e.g., global positive and negative feelings during the situation). The answer format is a 7-point Likert scale. A second set of 15 single ratings (HSEF-Preferences), which are related to patients' general preferences for clowns, was given to patients at the end of the study (e.g., general liking of clowns; 5-point Likert scale).

Procedure

[4] The present study addresses emotional reactions to clowns, which are seen as a trigger of hilarity. Hence, only items representing facets of hilarity were selected to compose trait cheerfulness.

Prior to the study, the local ethics committee approved the study. Consent forms were handed out before and after the experiment. The core of the current study was a surprise visit from a hospital clown pair. The study took place in a separate room in the rehabilitation center, and the procedure was highly standardized. Patients were recruited with the cover story that they were going to participate in an evaluation of patient satisfaction in hospitals. They were also told that a staff member would conduct a routine assessment, which they were to evaluate afterwards. Two patients participated in each trial. Patients first filled out the HSEF-General, followed by a baseline assessment of emotional states (CLEM-29, HSEF-Current). Afterwards, the clown intervention of a predetermined length took place (Min = 4.00, Max = 8.85, *M* = 6.65, *SD* = 1.17). It consisted of a semi-standardized performance of a hospital clown pair (one male clown with 17 years of experience, and one female clown with 16 years of experience), aiming at the induction of a positive emotional state in the patients. The same clowns performed in all trials, and used the same roles, clothes and make-up. They were instructed to limit the length of the interaction to about 5-8 minutes[5]. After the clowns left the room, patients filled out the state measures (CLEM-29, HSEF-Current). Patients subsequently were debriefed about the real aim of the study (to investigate emotional reactions to hospital clowns) and asked not to disclose the use of clowns to other patients until the study was completed. For the last step of the study, they filled out the trait measures (STCI-T<60, HSEF-Preferences).

Full color, digital format films with a close-up view of the patients' face were recorded. To be able to code the same clown-patient interactions for all subjects, ten standardized scenes occurring in all trials (about 10 to 20 seconds long) were extracted, each containing a studied punch line produced by the clowns followed by the reaction of patients.

[5] A detailed description of the actions and roles of the hospital clown intervention is given in Auerbach et al. (2016).

A certified FACS coder[6] coded the resulting 260 observations (26 patients with 10 scenes each) with the help of the FACS (Ekman et al., 2002a). A Duchenne smile was defined as a symmetric and timely coincidental movement of the orbicularis oculi muscle around the eye (AU6) and zygomatic major muscle at the corners of the mouth (AU12). It could be accompanied by a tightening of the eyelids (AU7) and mouth opening (AU25, AU26, AU27), but no other action unit[7] (Ekman & Friesen, 1982). The Non-Duchenne smile was defined as AU12 alone (phony smile), or AU12 plus further action units that are associated with negative feelings (masking or mixed smiles, Harris & Alvarado, 2005). Laughter vocalizations were coded using one of four codes: "single unvoiced (ch)", "single voiced (ha)", "multiple unvoiced (ch ch ch)", or "multiple voiced (ha, ha, ha)".

Results

A frequency score for enjoyment smiles was built by summing up all of the Duchenne smiles in ten scenes (α = .80). A frequency score for false smiles was built by summing up all of the Non-Duchenne smiles in the same ten scenes (α = .58). The Non-Duchenne smile category was more heterogeneous than the Duchenne smile one, as it comprised different types of false smiles. A laughter score was built by summing up all four types of laughter vocalizations in ten standardized scenes (α = .75). All variables used in the analyses were normally distributed.

Types of smiles

Patients on average smiled 8.92 times (*SD* = 3.76) during the 10 scenes. The percentage of Duchenne smiles among all smiles was 76.29%. The minimum was zero Duchenne smiles; the maximum was 16 (*M* = 6.81, *SD* = 3.74). The minimum of Non-

[6] The certification confirms that the coder has passed the FACS final test and proved sufficient reliability (agreement index = .78) against expert scoring with video material from actual interactions.

[7] In few cases, high intensity combinations of AU12 and AU6 during apex were accompanied by nose wrinkling (AU9) and/or eyebrow-lowering frowning (AU4). Following Hofmann (2014), these smiles were classified as high intensity Duchenne smiles. In the offset of the AU12, few patients pulled down their lip corners (AU15) or slightly pressed their lips together (AU24). There was no time overlap with the apexes of the AU12 and thus they were seen as regulatory mechanism (Ekman, Friesen & Hager, 2002b).

Duchenne smiles was zero; the maximum was eight (M = 2.12, SD = 2.01). Patients on average laughed 3.58 times during the ten scenes (SD = 4.14) with a maximum of 15 laughter vocalizations. Thirty percent of patients did not produce any laughter vocalizations during the selected scenes.

Relationship between subjective and objective assessments

Negative affect after the clown visit was very low (M = 1.73, SD = 1.32), and positive affect was high (M = 5.12, SD = 1.5; scale from 1-7). Patients enjoyed participating in the study to a high extent (M = 4.24, SD = 0.77; scale from 1-5), and 81.5% stated that they felt better after the clown visit. The frequency of Duchenne smiles was positively correlated with funniness of the clown visit (r = .57, p < .01), global positive feelings (r = .46, p < .01), transcendence (r = .40, p < .05) and the joy of participating in the study (r = .43, p < .05), and negatively correlated with global negative feelings after the clown visit (r = -.38, p < .05). The frequency of Non-Duchenne smiles was correlated with the joy of participating in the study (r = -.62, p < .01), transcendence (r = -.59 p < .01), unease (r = .34) and feeling better after the clown visit (r = -.33, both marginally not significant, p = .06). Laughter was correlated with Duchenne smiles (r = .37, p < .05), transcendence (r = .46, p < .05), amusement (r = .44, p < .05), funniness of the clown visit (r = .46, p < .01), and feeling better after the clown visit (r = .41, p < .05).

The influence of trait cheerfulness

Next, it was tested whether high trait cheerful individuals had higher levels of positive emotions during the clown intervention than low trait cheerful individuals. To build two groups of equal size, we allocated ten patients with the lowest scores to group 1 (low trait cheerful), and ten patients with the highest scores to group 2 (high trait cheerful). A 2x2 repeated measures ANOVA with trait cheerfulness (high vs. low) and type of smile

(Duchenne smile vs. Non-Duchenne smile) was computed for the frequency of smiling. Results are displayed in Figure 1.

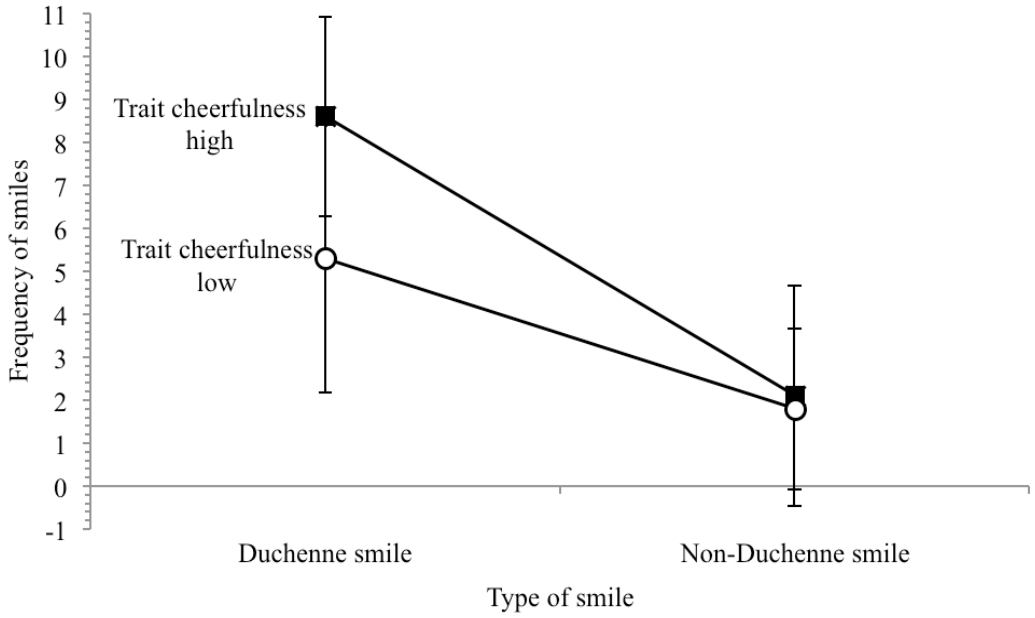

Figure 1. Frequencies of smiles during the hospital clown intervention for individuals high and low in trait cheerfulness.

Patients showed more Duchenne smiles than Non-Duchenne smiles, $F(1, 18) = 31.58$, $p < .001$, partial $\eta^2 = .64$, and high trait cheerful individuals smiled more frequently than low trait cheerful individuals, $F(1, 18) = 6.90$, $p < .05$, partial $\eta^2 = .28$. The interaction just failed to be significant, $F(1, 18) = 2.84$, $p = .11$. However, there was a numerical trend towards higher levels of Duchenne smiles in the high trait cheerful group ($M = 8.60$, $SD = 2.32$) than in the low trait cheerful group ($M = 5.30$, $SD = 3.13$). A independent samples t-Test confirmed that the two groups significantly differed in their frequency of Duchenne smiles, $t(18) = -2.68$, $p < .05$. No difference was found for Non-Duchenne smiles, $t(18) = -0.30$, $p = .77$.

Individuals high in trait cheerfulness reported higher positive feelings, $t(31) = -2.35$, $p < .05$, higher funniness ratings of the clowns, $t(31) = -2.82$, $p < .01$, higher levels of transcendence (marginally not significant), $t(28) = -1.75$, $p = .09$, and a lower level of unease,

$t(28) = 3.09$, $p < .0$, and than individuals low in trait cheerfulness. The two groups did not differ in their general preference for clown performances, $t(31) = -1.54$, $p = .14$, and laughter, $t(18) = -0.70$, $p = .49$.

Discussion

The present study was the first to investigate individual differences in the emotional state of patients in response to a hospital clown intervention, and to use the FACS as a comprehensive, reliable technique for the objective assessment of emotions. This made it possible to distinguish between genuine expressions of enjoyment and false smiles in clown-patient interactions. The results confirmed that both types of smiles can occur during a humorous intervention (Harris & Alvarado, 2005), but eight out of ten smiles were Duchenne smiles. Hence, the predominant types of patients' smiles were indeed the smiles of enjoyment. In the present study, the facial expression of enjoyment was not only highly related to funniness ratings of the hospital clown performance (replicating humor research; Ruch, 1995, 1997), but also to the level of transcendence patients felt (extending humor research). Patch Adams, one of the pioneers of hospital clowning, described the work of hospital clowns as a combination of humor and *love* (Adams, 2002). Linge (2012) interviewed children after a hospital clown intervention and came to the conclusion that a close connection between the clown and the recipients (*magical attachment*) is a core component of a (successful) clown-patient interaction. Hospital clown interventions apparently elicit feelings that go beyond the typical humor response, such as feelings of connection, liberation, appreciation or playfulness. In this sense, the present research validates studies using self-report measures (Auerbach et al., 2014, in press), and strengthens the widespread assumption of practitioners and clown organizations (see Dionigi et al., 2012) that on average hospital clown interventions successfully create positive experiences and emotions for patients in need of care.

Another important, yet unanswered question was whether a hospital clown intervention is equally successful in eliciting a positive emotional state in all patients, or whether some groups of patients benefit more from the intervention than other groups. Derived from the theory of the temperamental basis of the sense of humor (Ruch, Köhler & van Thriel, 1996), a trait could be identified that has been shown to be an important predictor for the emotional reaction to humorous stimuli repeatedly – trait cheerfulness (e.g., Hofmann et al., 2015; Ruch, 1997). The present study gives further validation to trait cheerfulness as predictor of positive emotions by demonstrating that a hospital clown intervention does not lead to high levels of amusement in all cases. Hence, not all patients benefit equally from the clown intervention. Clowns working in the field should always bear in mind that some patients do not want to be involved in a humorous and playful interaction, look for signs of refusal, and act accordingly. At the same time, the results can also be seen as a justification for practitioners on a 'bad day' (e.g., in case their performance does not lead to the intended success, i.e., the patients do not smile or laugh). In fact, in many clown organizations hospital clown training includes interpersonal skills, the sensitization of the clowns to the current state of patients, and the appropriate handling of uncertainty and refusal (Dionigi et al., 2012), which seems even more important given the results presented here.

The study has some limitations. First, only one clown pair was used. A next step could be to study possible interactions between high and low trait cheerful individuals and different kinds of clowns with different techniques (clown-person fit). The clown pair used in this study had a rather playful, interactive, hilarity-based style, while other clowns work in a more sensitive, insightful and composed way (Hofmann, Ruch, Auerbach & Platt, 2014). Also, cultural differences in humor and clowning have not been studied here. Second, the sample was rather small and very heterogeneous with a wide age range and few females, which was due to the convenience sampling method. Future research should collect larger samples more

representative of hospitalized adult patients. Third, the situation was somewhat artificial – as patients were overtly filmed during the intervention – and the intervention was highly standardized, and other than in real life the subjects were committed to take part in the study. Results presented here might actually underestimate the true relationships between the behavior, subjective experience and personality of individuals.

Despite the limitations, the results promote the use of hospital clown interventions for the enhancement of a positive emotional state in patients in need of care, but also point out the relevance of accounting for individual differences in recipients of the interventions. Our hope is that this will stimulate future research in that other researchers also combine different assessment methods to get a clearer picture of the variety and uniqueness of emotional responses of patients during a hospital clown intervention. This knowledge can be used by organizations training clowns to raise the awareness of signs that help explaining the success and failure of hospital clown interventions in their work in hospitals to prevent unwanted side effects such as the induction of negative emotions.

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GENERAL DISCUSSION

In recent years, hospital clown interventions have gained more and more influence in hospitals, nursing homes and psychiatric institutions. Practitioners working in the field and clown organizations worldwide agree that these humorous interventions benefit people of all ages in need of care as they positively influence their emotional state, health and well-being (e.g., Barkmann, Siem, Wessolowski, & Schulte-Markwort, 2013; Dionigi et al., 2012; Wertgen, 2009). A survey of the literature revealed that a considerable amount of studies have been conducted to investigate the benefits of hospital clown interventions, but very basic research questions have not been studied sufficiently. Most research in the field has concentrated on the reduction of negative affect or changes in physiology, omitting an investigation of the fine-grained changes in positive emotional states of the recipients of a hospital clown intervention. Furthermore, the reviewed studies were not free of criticism regarding methodology (e.g., the procedure of the hospital clown intervention was not standardized, the effects were not compared to comparison interventions). The main aim of this thesis was to close this research gap, and thus gain more knowledge about the effects of hospital clown and comparison interventions on the emotional state of individuals. This was studied from two angles. First, observers were asked to watch videos of hospital clown interventions, nurse assessments and circus clown performances, and then to assess their emotional state on self-report instruments. Second, patients involved in a hospital clown intervention and a nurse assessment were filmed and their interactions with the clowns were studied with the help of objective and subjective instruments. The main results of the presented studies will be summarized in the following paragraphs, discussing limitations as well as theoretical and practical implications.

Main results and conclusions

Part One. Four objectives were pursued in Part One, all of which concerned observers of hospital clown interventions. First, in the absence of a comprehensive research instrument for an evaluation of the emotional states of individuals in response to clowns, a collection of clown-specific emotional states was created (the CLEM-29). This was obtained by asking expert clowns to generate terms describing the feelings that emerge during the clown-patient interactions, and by asking laypersons to freely associate their thoughts and feelings while watching videos of clown performances and clown-patient-interactions.

The second aim was to investigate the empirical overlap between the CLEM-29 and instruments based on existing models of emotional states (BSKE[EWL], STCI-S<18>). Results showed some (expected) relations between positive (and negative) affect and the positively (and negatively) connoted ratings from the CLEM-29, as well as some overlap between the humor-related state scale and the CLEM-29 (mostly cheerfulness and hilarity). Importantly, a considerable amount of variance in the CLEM-29 ratings was not explained by existing scales of emotional states, which for the first time legitimized the ratings in the context of clowning.

The study also looked at whether the single ratings of the CLEM-29 are composed of different facets of positive affect. The majority of CLEM-29 ratings were predicted by state cheerfulness only, which was particularly true for the emotional responses after a circus clown video. However, when looking at the ratings after watching a hospital clown video, the emotional state could be described as a combination of cheerfulness and (positive) seriousness. Especially ratings from the related factor of transcendence incorporated a combined cheerful and serious state. These results fit very well into Rahner's (1952) description of a humorous person as a blend of seriousness and cheerfulness who is able to smile in the face of adversity (homo ludens). In a recent empirical study, Rahner's thesis was supported inasmuch as a combination of high trait cheerfulness and high trait seriousness was

indeed found in the personality of certain individuals, and those individuals who score high in both traits also had high scores in many facets of playfulness (Proyer & Rodden, 2013).

The combination of a cheerful and serious state is a special characteristic in the hospital context: Hospitalization is often a traumatic event for individuals (Karanci & Dirik, 2003) leading to feelings of unease, nervousness, tension or even fear (Wertgen, 2009), and hospital clowns possibly need to deal with and react to both negative emotions and positive emotions emerging during their work. Lersch (1962) distinguished between hilarity/merriness and cheerfulness in his description of the dispositions of individuals. In his view, a cheerful individual is surrounded by brightness, lightness, and elevation[1], and has a composed view on life and its adversities, while a merry individual is described as being more shallow, prone to exuberance and is looking for entertainment and distraction. Cheerfulness in his definition is closely related to feelings of transcendence, which played a major role in the hospital clown interventions studied in this thesis, and has a close relation to seriousness (while hilarity without seriousness played a major role in the circus clown performances). Koller and Gryski (2008) propose a theoretical model of therapeutic clowning, in which hospital clowns evoke feelings of elevation, superiority and control in the audience. Linge (2011) interviewed nurses about their view on hospital clown activities. They stated that "something different happened that lifted them [the children] above their daily hardships towards a more playful existence" (p. 5902), and that the children were freed from demands, diseases and suffering. This elevating and liberating effect of clowning has been described in affective humor theories as tension-release theory (e.g., Freud, 1905), and in the freedom theory (as described in Part Two). Humor frees people from accustomed concerns, conflicts, or modes of processing and provides "release from our stabilizing systems, escape from our self-imposed prisons. Every instance of laughter is an instance of liberation from our controls" (Mindess, 1971, p. 23).

[1] Original German citation: „Neben dem Zuge des Sonnigen, der Lichthaftigkeit ist es noch derjenige des inneren Auftriebs, der „Gehobenheit", der Leichtigkeit und Befreitheit, der dem Erlebnis der Heiterkeit wesenhaft zugehört." (Lersch, 1962, p. 308).

The third aim of Part One was to examine whether the predictive value of the CLEM-29 ratings was over and above existing scales for the total amount of positive and negative affect after watching a video of hospital clowns and a video of circus clowns. For both types of clowns, ratings from the CLEM-29 outperformed the traditional models of emotional states in the prediction of global positive and negative emotional states. Most notably, the feeling of a close association (connection) with the clown played a predominant role, which matches results from qualitative studies that emphasize a *magical attachment* (Linge, 2012), *love* and *compassion* (Adams, 2002) between the clown and the recipient. A recent study investigated this connection between the clown and the patient not only with qualitative data or self-report questionnaires, but also with the help of physiological data (Scheel, Höppner, Grotevendt, & Barthlen, 2016). The study tested the hormone oxytocin, which effects bonding between a mother and her child, prosocial behavior and the development of trust and attachment between individuals (IUPHAR/BPS guide to pharmacology, 2016). Oxytocin levels and state anxiety were measured before and after surgery in a group of children that were accompanied by a clown compared to a group without a clown visit. Results showed that in the clown group, the children had lower anxiety ratings as well as higher levels of oxytocin after the surgery compared to the baseline. The control group showed no such changes, thus demonstrating that the calming effect of clowning on children undergoing surgery goes along with a rise in the bonding hormone of children. This finding emphasizes the importance of the connection between a clown and the patient in order to positively impact well-being.

The fourth aim was to study the uniqueness of hospital clown interventions in their effects on observers in comparison to circus clown performances (sharing the humor component with hospital clowns) and nurse-patient interactions (sharing the caring aspect with hospital clowns). An inspection of the factorial structure of the ratings revealed two major factors of amusement and transcendence, and two minor factors of unease and arousal.

When comparing emotional experiences of observers watching videos of hospital clowns, nurse-patient interactions and circus clowns, all factors (and single ratings) were able to discriminate between the three groups. The hospital clown videos elicited the highest levels in most of the CLEM-29 ratings (except for the negative ones and some ratings relating to hilarity, where the circus clown came into play as well). Interestingly, the nurses elicited transcendent emotions to a certain extent as well. This supports the notion that nurses are caring and attentive, and they are also able to elicit positive emotional states (but they lack the humorous component). Recent developments in the field show that hospitals encourage their nurses to improve their relationships with patients by training them in humor skills (Duffin, 2009). It remains to be seen how successful this is given the fact that nurses usually have a very busy schedule, so clowns are invited to hospitals and they are able dedicate more time to each patient.

In summary, the studies conducted in Part One showed that a collection of emotional states specific for clowning proved to be of value in the investigation of hospital clown interventions. However, it needs to be mentioned that the development of the CLEM-29 as well as the conducted studies are based on the perspective of observers of hospital clown interventions. From the design of the first study it was not possible to answer the question of whether a real hospital clown intervention also elicits a combination of cheerful and transcendent states, this it needed further investigation. In the literature it is assumed that the feeling state of observers and individuals interacting with a hospital clown overlap to a high extent. Linge (2013) showed that the perceptions of the clown-patient interactions of observers, staff members and participants largely corresponded in a series of qualitative studies. Additionally, Barkmann and colleagues (2013) found corresponding results regarding the benefit of clown interventions in different sources of information (hospital clowns, staff members, parents of the recipients of the intervention). To be able to generalize the results to

individuals actually involved in the intervention, Part Two and Part Three addressed recipients of real hospital clown interventions.

Part Two. In the second part, a standardized experiment was carried out in a physical rehabilitation center with adult patients involved in a hospital clown intervention. The aim was threefold. First, the changes in the patients' emotional states from baseline to after an intervention were studied in an unannounced hospital clown intervention and a comparison intervention (routine nurse assessment). The results showed that a hospital clown intervention successfully raised the level of amusement compared to baseline and the nurse intervention. Both interventions led to an increase in arousal, and no change in the level of unease was found. Unexpectedly, the level of transcendence was highest at baseline and lowered during both interventions. It was speculated that a reason for this could be the specific features of the sample of disabled patients in the physical rehabilitation in combination with the recruitment method. Patients who have lost many of their skills and abilities due to accidents might have felt privileged and appreciated because according to the cover story, they were recruited to help improve the hospital routine and quality of care.

Second, the emotional reactions of patients observing the interventions were compared to reactions of patients involved in the interventions, and no differences were found in any of the CLEM-29 dimensions between individuals in an active or passive role. This speaks in favor of the already postulated notion that groups of patients as well as bystanders equally benefit from the hospital clown intervention equally (Barkmann et al., 2013; Linge, 2013). This finding also fits well into the theory that emotions (Hatfield, Cacioppo, & Rapson, 1994) and laughter (Provine, 1992) are contagious. This becomes even more important when looking at the effects of the role and the interventions using the objective data from Part Three instead of the subjective CLEM-29 ratings (see Figure 1). Again, no differences were found in the level of positive emotions (here: frequency of Duchenne smiles) between observers and

participants, $F(1, 24) = 0.03$, $p = .86$, but there was the expected difference in the frequency of Duchenne smiles in the two interventions: the hospital clown intervention elicited a greater amount of smiles of enjoyment than the nurse assessment, $F(1,24) = 27.97$, $p < .001$, partial $\eta^2 = .54$. There was no significant interaction between role and intervention, $F(1,24) = 0.56$, $p = .46$. Results are displayed in Figure 1.

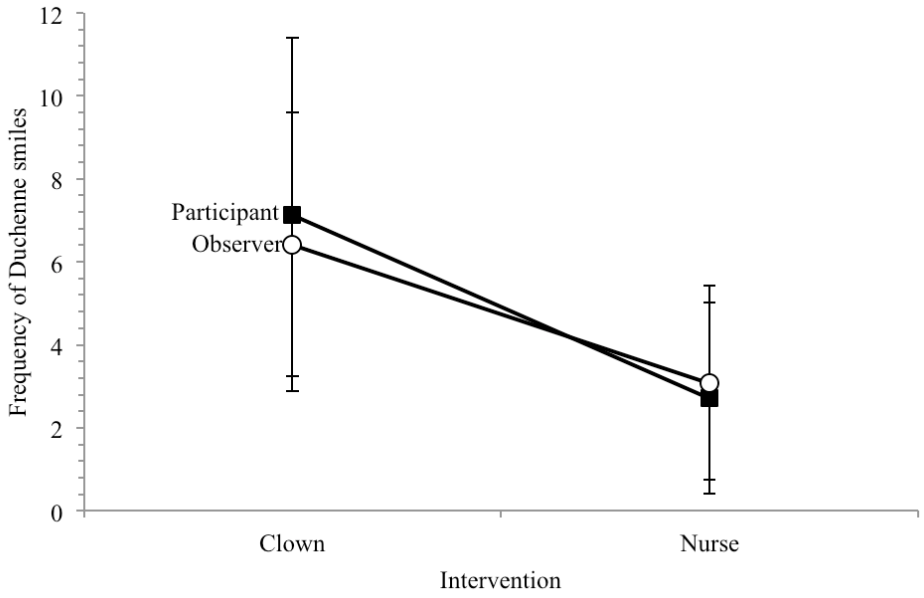

Figure 1. Frequency of Duchenne smiles of participants and observers during the clown and nurse intervention.

The same results were found for the frequency of laughter vocalizations instead of the Duchenne smile. When looking at false smiles, no significant effects for role or intervention were found for the frequency of Non-Duchenne smiles. Hence, both subjective and objective assessment methods revealed that the positive emotional state elicited by a hospital clown intervention is different from the effect of a nurse intervention. However, it does not differ between both observers and participants of the intervention.

The third aim of Part Two was to test the role of the CLEM-29 dimensions in the prediction of the total amount of positive affect after the hospital clown intervention. Again, a combination of amusing and transcendent components best predicted a global positive feeling

state. Hence, the results from Part One could be replicated in a sample with patients involved in a real hospital clown intervention.

It is noteworthy that after the hospital clown intervention the patients were asked if they had experienced any further emotions that were not on the list. This was done to check if the CLEM-29 was missing any core aspects of clowning that only emerged in a face-to-face interaction with a hospital clown. Only six out of 42 patients answered to the question, and they did not report any previously unknown emotional states. Two patients referred to physical states (being tired, having a headache) without relating them to the clowns. One patient described feelings of cheerfulness and happiness, another patient praised the magic trick performed by the clowns, and yet another patient wished there were more clown interventions in the hospital (because it raises the mood). In summary, the results showed that the emotional states identified in the first study with observers also played a major role in the evaluation of a hospital clown intervention.

However, the experiment conducted in Part Two was not without limitations. In order to study the spontaneous emotional reactions of patients to a surprise clown visit, the cover story included a recruitment method that may have influenced their initial level of feelings of appreciation and worth (as they were told that their input in this research would help improve the hospital routine and quality of care). Thus, neither the clowns nor the nurses were able to raise the initial high level of felt transcendence felt by patients. Furthermore, the experimenters were aware of the aims of the study. Also, the study pursued two possibly conflicting priorities. One was to keep a high level of standardization during each hospital clown intervention, and the other was to test the hypotheses in a highly natural setting to be able to compare results to the first study carried out in the laboratory. This resulted in two outcomes. First, some of the spontaneity of the clown-patient interactions got lost. This might have led to an underestimation of the true value of positive emotional states. Second, it

appeared to be rather difficult to successfully create two separate roles of patients (observer vs. participant) within the same social situation. Quite frequently, patients who were unobtrusively assigned the role of the observer, resisted the attempt of the clowns to disregard them, and proactively interposed in the interaction between the participant and observer. This was confirmed by asking the patients about their perception of their role during the experiment, which during the hospital clown intervention resulted in some wrong perceptions. Interestingly, most of the wrong perceptions were from participating patients who thought they were observing. Possibly, the high level of standardization of the hospital clown intervention played a part in the impression of some patients that they were watching a performance instead of feeling that they were actively involved. Nevertheless, the emotional experiences of participants and observers were the same, even when only the data of patients with correct perceptions were analyzed.

Part Three. The main research interest of Part Three was to investigate whether a hospital clown intervention is beneficial for everyone, or whether individual differences influencing the emotional reactions of patients during the intervention can be identified. In Part Three, an objective assessment method for emotional states, the FACS (Ekman et al., 2002), was deployed in addition to self-report instruments, which allowed for the distinction between the facial expression of genuinely felt positive emotion (the Duchenne smile or enjoyment smile) and the facial expression of false smiles. The research aim was twofold. First, emotional experiences expressed in the face of patients during a hospital clown intervention were investigated. On average the patients in the study displayed more frequent Duchenne smiles during the hospital clown intervention than Non-Duchenne smiles. Both facial displays were related to the subjective experiences of patients, and the two methods, FACS and the self-report instrument CLEM-29, converged well. Positive experiences were positively related to the level of Duchenne smiles, and negative experiences were negatively

related to Duchenne smiles. Additionally, positive experiences were negatively related to the frequency of Non-Duchenne smiles. Again, transcendence and amusement-related emotional states emerged as the two core emotional states during the hospital clown visit. For example, patients with a higher frequency of Duchenne smiles and a low frequency of Non-Duchenne smiles also reported feeling a high level of transcendence immediately after the hospital clown intervention. This gives further evidence to the assumption that the CLEM-29 contains relevant dimensions for clown-specific affectivity. The study showed that when individuals were cheered up by a hospital clown intervention (assessed with an objective method), they were likely to report the changes in experiences (e.g., the felt level of transcendence and amusement) using the subjective ratings. However, the sample size on which the correlation analysis between facial expressions and subjective experiences was based was rather small and therefore should not be over-interpreted.

The second aim of the study was to gain more knowledge about possible differences in emotions elicited in different groups of individuals. The idea behind this stemmed from humor research, which showed that an individuals' general susceptibility to humor appreciation and behavior depends – among other factors – on their level of trait cheerfulness (Ruch & Köhler, 2007). This has not been addressed in previous studies on hospital clown interventions. As a clown is by definition a humor stimulus and thus might influence different individuals in different ways, the influence of trait cheerfulness on the emotional reaction of patients was investigated. Like the temperamental model of trait cheerfulness predicted (Ruch et al., 1996), differences in the amount of smiling were found between two groups in this study. The low trait cheerful patients displayed lower frequencies of the Duchenne smile than the high trait cheerful individuals. Also following the model, the two groups varied in their level of state cheerfulness after the intervention. It is noteworthy that on average the group of

low trait cheerful patients also showed some smiles of enjoyment, but less frequently than the group of high trait cheerful patients.

Therefore, the conclusion of Part Three was twofold. First, the study of the facial expressions of patients involved in a hospital clown intervention led to the conclusion that a clown visit in a rehabilitation center is indeed an effective method to enhance the emotional state of adult patients. Second, personality characteristics of the patients should not be neglected, as they influenced their level of exhilaration during the intervention. The study clearly showed that individual differences are partially responsible for differences in the benefits for patients.

Nevertheless, as the temperamental model (Ruch et al., 1996) suggested, other factors also should be taken into account in the explanation of the variance in reactions to hospital clown. Ruch and Köhler (2007) proposed that not only temperamental traits, but also situational factors (such as room atmosphere or social situation) and characteristics of the humor stimulus influence the emotion of exhilaration. Ruch and Hehl (2007) showed that the appreciation of humor varied on two dimensions: a structural dimension of the humor stimulus (incongruity-resolution types of humor vs. nonsensical humor) and a content dimension (sexual humor, which may have either structure). In the present study only one clown pair was utilized, and they carried out a highly standardized clown visit[2]. Hence, no effects of the stimulus could be tested and consequently results cannot be generalized to different types of clowns.

However, the situation was a social one as two patients took part in each trial, and a genuine clown pair was used instead of a presentation of videos. Research on social mimicry showed that individuals in social situations tend to unconsciously imitate the facial

[2] A comprehensive analysis of the structure and content of the humor used by the clowns was not undertaken, but it can be said that the jokes used were mainly incongruity-resolution types (e.g., a magic trick with a displayed incongruity which was later resolved) combined with some sexual, but not exaggerated forms of humor (the clown pair repeatedly played with the battle of the sexes).

expressions of people with whom they are interacting (Bourgeois & Hess, 2008), and that facial mimicry leads to emotional mimicry (emotional contagion) – especially in the case of pleasurable emotions (Hess & Blairy, 2001). More recent research provided evidence that individuals respond with a Duchenne smile when they see spontaneous Duchenne smiles in others, even when they are alone watching a video (Krumhuber, Likowski, & Weyers, 2014).

Two possible sources that could have elicited mimicry were available in the present study: the clowns and the other patient in the room. However, the research presented here concentrated only on the facial expression of a single patient (facial expressions of the clowns were not filmed). In this study, patients showed numerous Duchenne smiles during the hospital clown intervention in response to the clowns: some with higher frequencies and some with lower frequencies (which hints that social mimicry is not sufficient for inducing the intended reactions in all individuals). Future research could investigate the influence of the social situation on the elicitation of facial exhilaration by matching the expressions of the clowns and the interaction partners.

Strengths and limitations

The results presented in the thesis offered a summary of the benefits of hospital clown interventions for the enhancement of the emotional state of adult recipients. The main aim was to explore the emotional responses of individuals observing hospital clown interventions and of individuals being involved in the interventions in order to get a deeper understanding of the diversity and uniqueness of emotions and emotional states elicited by hospital clowns. The thesis replicates and expands previous findings from humor research to a neglected field, the hospital clown intervention.

The replication was apparent in two ways. First, the thesis demonstrated that on average hospital clowns successfully elicit the emotion of amusement in individuals (which was assessed with the help of subjective and objective methods). Second, the results

demonstrated that a temperamental characteristic influences the level of exhilaration in patients during a hospital clown intervention. Patients with high levels of trait cheerfulness displayed higher frequencies of facial exhilaration and reported higher subjective levels of positive emotional states. On the other hand, individuals with low levels of trait cheerfulness displayed lower frequencies of facial exhilaration and reported lower levels of positive emotional states.

With regard to the expansion of previous findings, a core component of hospital clowning – transcendence – was identified (and assessed), and it has not been part of previous research (and previously available assessment instruments). Transcendence (e.g., feeling appreciated, elevated, connected to the clown) was among the emotional states that best differentiated between a circus clown performance, a nurse assessment and a hospital clown intervention in the study with observers. This was partly replicated in the study with patients actively involved in the hospital clown intervention. Although the overall level of transcendence was highest at baseline and lowered during both interventions, there was a numerical trend towards higher levels of transcendence during the clown intervention than during the nurse assessment[3]. Furthermore, individuals who displayed higher levels of facial amusement also reported higher levels of subjectively rated transcendence. In addition, transcendence was an important predictor of the total amount of positive affect in all studies, and outperformed the emotional states related to the typical humor response (e.g., funniness ratings, state cheerfulness).

In summary, this is the first empirical study presenting these effects using subjective and objective methods for the assessment of emotional states in the context of hospital clown interventions. The strength of the thesis was that it closed an identified research gap by

[3] This result gained further validation when inspecting the levels of exemplary single ratings representative for the factor of transcendence. For example, the average levels of the ratings “I feel touched” and “I took something away from it” (German: “Ich fühle mich beschenkt”) were highest after the hospital clown intervention, and significantly lowered during the nurse assessment and at baseline.

answering the very basic question of whether hospital clown interventions actually are a valid and suitable stimulus to elicit positive emotional states in adult individuals, and it used both subjective and objective assessment instruments. The results clearly speak in favor of the use of hospital clowns as a method to enhance positive experiences in recipients of such interventions. The thesis also comprised basic research (answering important basic questions neglected thus far) in an applied field. With the use of an experimental design in a hospital setting, it was possible to control a fair amount of confounding variables on the one hand, and to guarantee a sufficiently high level of naturalness (and thus external validity) on the other hand.

Nevertheless, there are limitations and unanswered questions. First, the samples that were used were convenience samples, and future research should strive to recruit larger, more representative samples (especially in "real life" studies in hospital settings) with a greater variety in terms of age and medical conditions, and with a more balanced gender distribution. Additionally, the use of different clowns would allow for the testing of possible differences in elicited emotions according to the characteristics of the humor stimulus.

Second, this thesis only took into consideration samples of adult patients, and it has yet to be investigated whether the diverse emotional states play a role in children as well. Linge (2012) reported some emotional states related to transcendence emerging in children. The method she used was observation, and she inferred that there is a *magical attachment* between the clowns and the children; however, the children themselves were not asked whether they felt "connected to the clown" or "appreciated". It is questionable whether the ratings from the CLEM-29 are appropriate for children (especially at a younger age).

Third, no follow up study was undertaken to test the possible long-term benefits of the hospital clown intervention for patients (i.e., the broaden and build aspects of the induced positive emotions). The thesis only looked at the immediate changes in the emotional state. It

did not answer the question of whether the mood-enhancing effect of the hospital clown intervention is short-lived and fades quickly, or whether changes in emotional states are of a longer duration and might lead to continuing benefits for the patients, such as better and faster recovery, a lower risk for traumatization or depressive symptoms due to the hospital stay. Formulated in terms of the broaden-and-build theory of positive emotions (Fredrickson, 1998), it could be hypothesized that positive feelings elicited by hospital clowns might broaden a patient's scope of attention and perception, which would help them to escape the daily hospital routine and focus on other aspects of life. However, both *broaden* and *build* effects on patients were not addressed in this experiment.

Fourth, the studies conducted in this thesis did not investigate the effects of hospital clown interventions on real bystanders (e.g., hospital staff, relatives who are not involved in the intervention) or on the clowns themselves. Barkmann and colleagues (2013) conducted a nationwide online survey in Germany for hospital clowns ($N = 87$). They found that clowns on average were very satisfied with their work, but that the job satisfaction was dependent on two factors: a higher feeling of appreciation of their work by the patients and their parents, and the sustainability of the effect for patients (meaning that if the hospital clowns believed that patients would benefit not only temporarily, but over a longer period, their level of job satisfaction was higher).

Fifth, this thesis did not take into account the clown's personality and behaviors that might contribute to a successful hospital clown intervention. Recent research points to personality traits of professional hospital clowns that could contribute to the effects of the interventions on patients. Professional clowns differ from the normal population in their level of the Big Five personality traits: Clowns score higher in agreeableness, conscientiousness, openness to experiences, and extraversion, and lower in neuroticism (Dionigi, 2016). Furthermore, the shift between the own persona and the clown persona in professional clowns

was investigated in a study by Dionigi, Ruch and Platt (2014). Hospital clowns who were better able to differentiate between their own persona and their clown persona were less interfered by external cues and internal thoughts, and they experienced less anxiety before and during the activity. Clowns who had higher positive beliefs and lower interferences (the ability to stay concentrated during the clown intervention and distance oneself from emotional situations) had a higher satisfaction with performing (Dionigi, Ruch, & Platt, 2014).

Another point to consider is whether there are some personality traits that might impede hospital clowns to be successful in their work. To date, no study has investigated the personality factors of clowns and their relation to the (positive or negative) effect of their intervention on patients in need of care. However, when looking into the literature on class clowns, some factors can be identified that seem to have positive relationships with emotional experiences as well as objective performance outcomes, while others have a negative impact. A study by Platt, Ruch and Wagner (2016) found some behaviors related to adolescent class clown dimensions that were beneficial for the adolescent's subjective positive school experiences (e.g., a comic talent), while other class clown behaviors were identified to be hindering (e.g., disruptive behaviors). In general, class clowning negatively affected the student's GPA and their ratings from teachers. Translating these results into the clinical setting of hospital clown interventions, it could mean that some traits and behaviors of the clowns lead to more success (recognizable by the clowns themselves in terms of subjective positive experiences, and by patients and innocent bystanders in terms of an evaluation of the intervention), while others would inhibit a successful intervention. An investigation of which personality traits and behaviors of the clowns lead to more positive emotions in patients, and which have the opposite reversed effect, is lacking.

Sixth, the research conducted for this thesis did not take into account a patient's personality factors outside of trait cheerfulness in order to explain individual differences in

the emotional reaction of patients to hospital clown interventions. In fact, cheerfulness has been shown to predict changes in the emotional state of individuals in various humor experiments, and also in this thesis' study on hospital clown interventions. However, in contrast to typical humor experiments, in the context of hospital clowning, positive emotional states in addition to amusement exceeding the humor response (e.g., transcendence) play an important role as well. Hence, one could argue that other personality traits might also be of importance in predicting changes in feelings of appreciation, connection, elevation, gratitude, privilege, liberation and the like during hospital clown interventions. Given that the thesis identified a broad range of positive emotional states relevant in the context of clowning, one could assume that more than one personality trait might be involved as well.

Within positive psychology, a total of 24 positive personality traits (character strengths) have been described (Peterson & Seligman, 2004) and studied in the context of emotional well-being (e.g., Park, Peterson, & Seligman, 2004), orientations to happiness (e.g., Peterson, Ruch, Beermann, Park, & Seligman, 2007), positive work experiences (e.g., Harzer & Ruch, 2013) and positive school experiences and school functioning in children (e.g., Weber, Wagner, & Ruch, 2014). Consistently, some character strengths were strongly associated with higher levels of positive experiences and well-being in different contexts. The 24 character strengths are subsumed under six virtues, one of which is transcendence (which includes strengths that forge connections to the larger universe and provide meaning; Peterson & Seligman, 2004), and one could assume that individuals with higher scores in character strengths under the virtue of transcendence are also more disposed to experience related emotional states. For example, individuals high in *gratitude*, who are habitually more thankful for the good things that happen and take more time to express gratitude than individuals low in gratitude, might also be more thankful for a well-intentioned hospital clown intervention. *Hope*, another character strength, goes along with an optimistic worldview, and individuals

high in hope expect the best and believe that a good future is something that can be brought about. One could assume that a strong belief in a positive outcome, which is already helpful during hospitalization, makes individuals more susceptible to interventions that supposedly are beneficial for one's health. Individuals who *appreciate beauty and excellence* tend to experience awe, wonder, and elevation while noticing beauty, excellence, and/or skilled performance (such as hospital clown interventions). Also *spirituality* might influence an individual's reaction to a hospital clown intervention: Having coherent beliefs about the higher purpose and meaning of the universe and having beliefs about the meaning of life might raise one's readiness to take part in a transcendent experience such a clown visit.

Under the virtue of humanity there is the *capacity to love and be loved* (valuing close relations with others, being close to people). It is a factor that has not only been proposed to play an important role during a hospital clown intervention by practitioners working in the field (e.g., Adams, 2002), but has also played a significant role in the research for this thesis (feeling associated with the clown).

To conclude, although it is possible that the positive personality traits described in the previous paragraphs might play a role in moderating the effect of a hospital clown intervention on patients, the evidence in the field of humor research suggests that individuals who cheer up during a humorous intervention are usually the ones who usually tend to surround themselves with humor (e.g., Ruch & Köhler, 2007). One could hypothesize that patients who are high in one (or more) of the described character strengths would need at least a slight general preference for clown humor to experience a mood change studied in this thesis (a combination of amusement and transcendence). Future studies should investigate combinations of positive personality traits in patients (e.g. high scores in trait cheerfulness and appreciation of beauty and excellence) and their moderating effects on the change in emotional states during a hospital clown intervention.

Last, the CLEM-29 in its current form is a collection of single ratings, which proved to be useful in the identification of clown-induced emotional states and was sensitive enough to discriminate between different groups of professionals. Factor scores extracted from a factor analysis were used to investigate the differences in the level of emotional states, but the standardized factor scores do not provide information about the absolute level of the elicited emotion on a scale with set anchors. The CLEM-29 will need to be further investigated so a complete research instrument can be developed. Additionally, information from several studies (with different clowns and samples of patients) would be needed to see which aspects of the CLEM-29 are most relevant to express the effects of clowns on patients. These aspects could then be extended into separate scales, and studies on the psychometric properties could be conducted.

Implications for future research and practice

With respect to the challenge of dramatically increasing health care costs in modern societies, efficiency and profitability of health care services have moved into the center of public debate. In this context, health care institutions should be interested in the question of how the use of positive humorous interventions such as hospital clown interventions can assist in the attempt to decrease recovery time of patients, which in turn decrease costs. In this respect, health care providers (such as hospitals) will be interested in learning about the relationships between the positive emotional states elicited by a hospital clown and the convalescence of patients. This brings about three questions, which need further investigation. First, does a positive humorous intervention, for example the hospital clown intervention, effectively raise the level of positive emotions in patients? Second, is there a relationship between the elicited emotions and later outcomes – such as higher well-being, better health and faster recovery? Third, if a relationship between elicited emotions and faster recovery can be assumed, how might health care providers actively manage the use of hospital clown

interventions in order to deal with increasing budget constraints while at the same time having the patients' well-being in mind?

This thesis gave an answer to the first question in that a hospital clown intervention had an immediate beneficial effect for individuals by successfully raising the level of positive emotional states. The next step for research would be to answer the second question by investigating the extent of the possible longer-term benefits (such as patients' better health or faster recovery) due to the elicitation of positive emotions. Finally, once such a link between positive emotions caused by a hospital clown intervention and favorable outcomes in the hospital has been demonstrated, research should address the question of how the implemented activity for the enhancement of positive emotions (the hospital clown intervention) can be ideally framed in order to utilize its therapeutic and economic potential (i.e., to elicit a required amount of positive emotional reactions in a maximum of individuals during a sufficient time period). This framing of the humorous intervention can be done on the level of the recipients of the intervention and on the level of the humor stimulus used (the hospital clown).

Regarding the recipients, one could ask whether there is a constant increase in marginal utility of repeatedly performed hospital clown intervention. In different words, does the repeated participation in a hospital clown interventions constantly maintain or increase the patients' level of positive emotions? This would mean that more interventions would go along with more benefit for the patients. Three types of individuals with three corresponding outcomes can be assumed. The first type is a person who benefits from the repeated participation in the same hospital clown intervention as the clown fits well with the person's humor[4]. The second type is a person with an effect of habituation. This means that while the first encounter with the hospital clown might lead to exhilaration, with repeated participation

[4] Without having investigated this in detail in Part Three, there were a few individuals in the sample who already knew the utilized clown pair from previous visits, were very happy to see them in the study and displayed a high frequency and intensity of positive emotions during the interaction.

in the same intervention the level of positive benefits decreases (diminishing marginal utility). Considering this effect, a more dynamic perspective on hospital clown interventions seems to be necessary; for example, a person might benefit from a different or modified kind of intervention. As many hospital clowns repeatedly visit the same hospitals and wards, it would be important to know how many of the initially exhilarated patients actually continue to benefit from the same type of intervention over time. In other words, how high is the "dropout" rate of individuals (whose level of positive affect does not increase with repeated participation in a humor intervention, but rather decreases), and what are the reasons for this? The third type of person is somebody who does not have a rise in positive emotions from the beginning. This might be due to the fact that the person does not want to be involved in any humorous encounter (e.g. low trait cheerful individuals). This thesis contributed to the last question by showing that not all individuals smiled and laughed to the same extent during the intervention, and that not all individuals reported the same (high) level of feeling better after the hospital clown intervention.

In regard to the features of the humor stimulus, humor research provides further evidence that the appreciation of humor also depends on the features of the stimuli presented (Ruch & Hehl, 2007), and not all individuals appreciate the same kind of humor (and hence, the clowns' humor does not always match the person's humor). One interesting field for future research is to try to match the features of the clowns to the appreciation-related features of the recipients (clown-patient fit), and thus get a better understanding of who benefits most from which type of hospital clown intervention.

For practitioners (e.g., active clowns or clown organizations who train clowns for assignment in the field), it could be useful to know which factors influence the amount of positive reactions in response to a hospital clown intervention, and what they can do to keep the "dropout" rate as low as possible. From the perspective of institutions, it would be useful

know what can be done so that the patient experiences a required amount of positive affect for a sufficient duration before a saturation takes place. This might also include the study of other possible applications of clowns in hospitals, such as their attendance at other therapeutic activities (e.g., physiotherapy) or painful medical routines. A benefit of clowns accompanying individuals undergoing painful or frightening treatments has been demonstrated with children in the past (e.g., Vagnoli et al., 2010), but the evidence presented in the area did not include investigating long-term outcomes of the clown interventions (such as a lowered risk for traumatization or complications), and did not include any patients other than children.

The beneficial longer lasting effect of positive emotions has been researched reasonably well in different contexts within positive psychology (Fredrickson, 2001), but never in the context of hospital clown interventions. However, this thesis gives a very promising insight into the nature and uniqueness of hospital clown interventions, and it is hoped that future research will attempt to answer some of the currently unanswered research questions. If it does, it will contribute to a further understanding of the psychological mechanisms underlying the success of hospital clown interventions over the course of the last thirty years.

Or, in the words of the pioneer in the field, “It used to be hard for love and fun to get in the door at hospitals. Mostly, volunteers became the carriers, glad to trade in love and fun because the personal rewards were so powerful. Hospital clowns have become the locus of humor and love, and what they do has been classified a therapy. But this greatly shortchanges us! We don’t need a puny love-and-fun therapy! We need love and fun as a context; the very stage on which we act out the dramas of health and life and death. When love and fun are the context, every hospital employee will be loving, joyful, tender, and fun” (Adams, 2002, p. 447).

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EHRENWORT

Hiermit erkläre ich, dass die Dissertation von mir selbst ohne unerlaubte Beihilfe verfasst worden ist.

Ort und Datum Unterschrift

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